

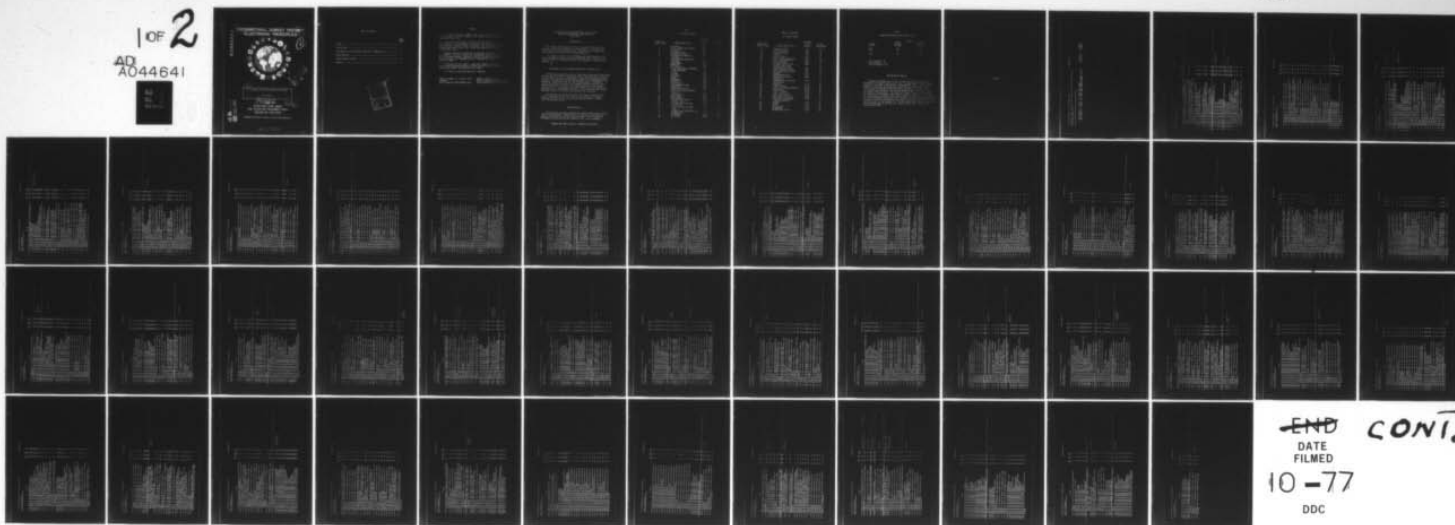
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AIRBORNE EARLY WARNING RADAR SPECIALIST, AFSC 32852.(U)  
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**OCCUPATIONAL SURVEY REPORT**  
**ELECTRONIC PRINCIPLES** Apr-Jun 77.



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ALBUQUERQUE

AIRBORNE EARLY WARNING RADAR SPECIALIST

AFSC 32852

14 AFPT-90-328-222  
11 15 September 1977

OCCUPATIONAL SURVEY BRANCH  
USAF OCCUPATIONAL MEASUREMENT CENTER  
LACKLAND AFB TEXAS 78236

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## PREFACE

This report presents a summary of the results of a detailed Air Force Electronic Principles Survey of the Airborne Early Warning Radar Specialist, AFSC 32852.

The Electronic Principles Inventory (EPI) was developed by Major Thomas J. O'Connor and Mr. Hendrick W. Ruck and the survey data were analyzed by Major William A. Tamashunas. All are members of the Occupational Survey Branch, USAF Occupational Measurement Center, Lackland AFB, Texas.

Computer programs for analyzing the data were designed by Dr. Raymond E. Christal, Occupational and Manpower Research Division, Air Force Human Resources Laboratory (AFHRL), and were written by the Project Analysis and Programming Branch, Computational Sciences Division, AFHRL.

Distribution of this report is made upon request to the USAF Occupational Measurement Center, attention of the Chief, Occupational Survey Branch (OMY), Lackland AFB, Texas 78236.

This report has been reviewed and is approved.

JAMES A. TURNER, JR., Colonel, USAF  
Commander  
USAF Occupational Measurement Center

WALTER E. DRISKILL, Ph.D.  
Chief, Occupational Survey Branch  
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ELECTRONIC PRINCIPLES OCCUPATIONAL SURVEY REPORT  
AIRBORNE EARLY WARNING RADAR SPECIALIST  
AFSC 32852

INTRODUCTION

↙ This report summarizes the results of the administration of the Electronic Principles Inventory to airmen assigned as Airborne Early Warning Radar Specialist (AFSC 32852). The data for this report were collected during the period April through June 1977.

This report describes: (1) development and administration of the survey instrument; and (2) electronic principles used by DAFSC 5-skill level personnel both CONUS and overseas and assigned to selected major commands.

↑  
DEVELOPMENT OF THE ELECTRONIC PRINCIPLES INVENTORY (EPI)

The EPI was developed by personnel from the Occupational Survey Branch who were well qualified in theoretical physics and electronics, as well as in task analysis and survey development. Over 300 maintenance personnel from SAC, TAC, ADC, MAC, and AFCS participated in the development of the inventory. Representing the five ATC training centers, electronics experts who averaged 12 years of maintenance experience and four years of electronic principles instruction experience spent several weeks refining the EPI. In addition, personnel at the Electrical Engineering Department of the USAF Academy and the Air Force Human Resources Laboratory were consulted during the development of the inventory.

The final version of the EPI used in this survey contained 1,257 items in 62 subject matter areas covering all electronic principles training given at the five ATC technical training centers. Table 1 lists the 62 subject areas.

ADMINISTRATION

The Electronic Principles Inventory was administered by mail to AFSC 32852 airmen worldwide. Responses from 14 individuals represented 31 percent of the total of all AFSC 32852 personnel. Table 2 shows the percentage distribution by major command of the survey incumbents.

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TABLE 1  
EPI SUBJECT AREAS

<u>SEQUENCE OF SUBJECT AREAS</u>	<u>SUBJECT AREA TITLE</u>	<u>BEGINNING ITEM NUMBER</u>	<u>GPSUM PAGE NUMBER</u>
1	MATHEMATICS	A1	2
2	DIRECT CURRENT AND VOLTAGE	A15	2
3	RESISTANCE	A24	2
4	MULTIMETER USES	B52	3
5	ALTERNATING CURRENT	B61	4
6	INDUCTORS AND INDUCTIVE REACTANCE	B67	4
7	CAPACITORS AND CAPACITIVE REACTANCE	C92	5
8	TRANSFORMERS	C128	6
9	MAGNETISM	C171	7
10	RCL CIRCUITS	D185	8
11	SERIES AND PARALLEL RESONANCE (TIME CONSTANTS)	D229	10
12	FILTERS	D239	10
13	COUPLING	E261	11
14	SOLDERING	E273	11
15	RELAYS	E295	12
16	MICROPHONES	F314	12
17	SPEAKERS	F327	13
18	OSCILLOSCOPES	F342	13
19	SEMICONDUCTOR DIODES	G354	13
20	TRANSISTORS	G404	15
21	TRANSISTOR AMPLIFIERS	G428	16
22	SOLID-STATE SPECIAL PURPOSE DEVICES	H477	19
23	POWER SUPPLIES	H483	19
24	OSCILLATORS	H512	19
25	MULTIVIBRATORS	I539	20
26	LIMITERS AND CLAMPERS	I555	21
27	ELECTRON TUBES	I565	21
28	ELECTRON TUBE AMPLIFIERS AND CIRCUITS	J609	22
29	SPECIAL PURPOSE ELECTRON TUBES	J616	23
30	HETERODYNING, MODULATION, AND DEMODULATION	J632	23
31	AM SYSTEMS	K638	23
32	FM SYSTEMS	K666	24

TABLE 1 (CONTINUED)

## EPI SUBJECT AREAS

<u>SEQUENCE OF SUBJECT AREAS</u>	<u>SUBJECT AREA TITLE</u>	<u>BEGINNING ITEM NUMBER</u>	<u>GPSUM PAGE NUMBER</u>
33	NUMBERING SYSTEMS	K685	25
34	LOGIC FUNCTIONS	L695	25
35	BOOLEAN EQUATIONS	L708	26
36	COUNTERS	L733	27
37	TIMING CIRCUITS	M757	27
38	USE OF SIGNAL GENERATORS	M769	28
39	MOTORS AND GENERATORS	M779	28
40	METER MOVEMENTS	N808	29
41	SATURABLE REACTORS AND MAGNETIC AMPLIFIERS	N818	29
42	WAVESHAPING CIRCUITS	N834	30
43	SINGLE SIDEBAND SYSTEMS	O845	30
44	PULSE MODULATION SYSTEMS	O875	31
45	ANTENNAS	O914	32
46	TRANSMISSION LINES	P953	34
47	WAVEGUIDES AND CAVITY RESONATORS	P984	35
48	MICROWAVE AMPLIFIERS AND OSCILLATORS	P1034	37
49	REGISTERS	Q1110	39
50	STORAGE DEVICES	Q1117	40
51	DIGITAL TO ANALOG CONVERTERS	Q1126	40
52	PHANTASTRONS	Q1140	41
53	SCHMITT TRIGGERS	R1141	41
54	CABLE FABRICATION	R1144	41
55	INPUT/OUTPUT DEVICES	S1146	41
56	PHOTO SENSITIVE DEVICES	S1149	41
57	SYNCHRONOUS VIBRATIONS (CHOPPER CIRCUITS)	S1150	41
58	INFRARED	T1159	41
59	LASERS	T1186	42
60	DISPLAY TUBES	T1220	43
61	PROGRAMMING	U1234	43
62	DB AND POWER RATIOS	U1255	44

TABLE 2  
COMMAND REPRESENTATION OF SURVEY SAMPLE

COMMAND	32852	
	PERCENT ASSIGNED	PERCENT OF SAMPLE
ADC	58	93
OTHER	42	7
TOTAL	100	100

Total Assigned - 45  
Total Sampled - 14  
Percent Sampled - 31%

#### PRESENTATION OF RESULTS

Personnel responded "yes" or "no" to the 1,257 electronic principles questions as related to their present job. A Group Summary (GPSUM) computer printout is provided in the Appendix portion of this report. Page 1 of the GPSUM lists the three selected groups identified for this report. Pages 2-44 show the percentage of the incumbents responding to the EPI items. The computer program results display the percent members answering "yes" to the subject area questions. The reader can locate a specific subject area by referring to the Appendix page number as listed in Table 1. For example, the Transformers area results are given on page 6 of the GPSUM. The percentage of survey respondents indicating use of specific electronic principles ranged from high in areas such as Alternating Current (p.4) and Soldering (pp. 11-12) to low in areas such as Speakers (p. 13) and Infrared (pp. 41-42). Additional AFSC 328X2 data can be obtained upon request to the Chief, Occupational Survey Branch (OMY).



APPENDIX



PCT MBRS RESPONDING «YES» BY SELECTED GRPS

GPSUMB PAGE 1

TABULATION OF ELECTRONIC PRINCIPLES UTILIZATION DATA FOR SELECTED GROUPS  
IN THE 32852 CAREER FIELD.

REPORTS ON THE FOLLOWING GROUPS WERE REQUESTED

GROUP IDENTITY • SPC151 ALL AIRMEN DAFSC 32852  
GROUP IDENTITY • SPC152 ALL AIRMEN DAFSC 32852 STATIONED IN CONUS  
GROUP IDENTITY • SPC154 ALL AIRMEN DAFSC 32852 ASSIGNED TO AUC

CONTAINING 14 MEMBERS.  
CONTAINING 14 MEMBERS.  
CONTAINING 13 MEMBERS.

TASK GROUP SUMMARY  
PERCENT MEMBERS PERFORMING

		DY-TSK		SPC SPC SPC		SPC SPC SPC			

PCT MORS RESPONDING 'YES' BY SELECTED GRPS

TASK GROUP SUMMARY  
PERCENT MEMBERS PERFORMING

BY-TSK	SPC	SPC	SPC
A 34 A3-11 DO YOU USE RESISTOR COLOR CODES WHICH INDICATE TOLERANCE.	151	152	154
A 35 A3-12 DO YOU USE RESISTOR COLOR CODES WHICH INDICATE FAILURE RATE.	86	86	85
A 36 A3-13 DO YOU MAKE DECISIONS IN WHICH YOU MUST DETERMINE HOW TWO OR MORE BATTERIES MUST BE CONNECTED TOGETHER TO ACHIEVE A SPECIFIC VOLTAGE.	43	43	38
A 37 A3-14 DO YOU USE OR REFER TO THE SCHEMATIC SYMBOLS WHICH REPRESENT BATTERIES, FUSES, CONDUCTORS, LAMPS, OR SWITCHES	36	36	31
A 38 A3-15 DO YOU CALCULATE TOTAL RESISTANCE FOR SERIES RESISTIVE CIRCUITS.	100	100	100
A 39 A3-16 DO YOU CALCULATE TOTAL CURRENT FOR SERIES RESISTIVE CIRCUITS.	57	57	54
A 40 A3-17 DO YOU CALCULATE INDIVIDUAL VOLTAGE DROPS FOR SERIES RESISTIVE CIRCUITS.	64	64	62
A 41 A3-18 DO YOU CALCULATE POWER DISSIPATION FOR SERIES RESISTIVE CIRCUITS.	64	64	62
A 42 A3-19 DO YOU CALCULATE TOTAL RESISTANCE FOR SERIES PARALLEL RESISTIVE CIRCUITS.	50	50	54
A 43 A3-20 DO YOU CALCULATE TOTAL CURRENT FOR SERIES PARALLEL RESISTIVE CIRCUITS.	64	64	62
A 44 A3-21 DO YOU CALCULATE INDIVIDUAL VOLTAGE DROPS FOR SERIES PARALLEL RESISTIVE CIRCUITS.	71	71	69
A 45 A3-22 DO YOU CALCULATE INDIVIDUAL BRANCH CURRENTS FOR SERIES PARALLEL RESISTIVE CIRCUITS.	43	43	38
A 46 A3-23 DO YOU CALCULATE POWER DISSIPATION FOR SERIES PARALLEL RESISTIVE CIRCUITS.	43	43	46
A 47 A3-24 DO YOU CALCULATE TOTAL RESISTANCE FOR PARALLEL RESISTIVE CIRCUITS.	57	57	54
A 48 A3-25 DO YOU CALCULATE TOTAL CURRENT FOR PARALLEL RESISTIVE CIRCUITS.	57	57	54
A 49 A3-26 DO YOU CALCULATE INDIVIDUAL VOLTAGE DROPS FOR PARALLEL RESISTIVE CIRCUITS.	64	64	62
A 50 A3-27 DO YOU CALCULATE INDIVIDUAL BRANCH CURRENTS FOR PARALLEL RESISTIVE CIRCUITS.	43	43	38
A 51 A3-28 DO YOU CALCULATE POWER DISSIPATION FOR PARALLEL RESISTIVE CIRCUITS.	43	43	46
B 52 B1-01 DO YOU MEASURE RESISTANCE.	100	100	100
B 53 B1-02 DO YOU REPAIR OHMMETERS.	7	7	8
B 54 B1-03 DO YOU MEASURE VOLTAGE.	100	100	100
B 55 B1-04 DO YOU REPAIR VOLTMETERS.	21	21	23
B 56 B1-05 DO YOU REPAIR AMMETERS.	21	21	23
B 57 B1-06 DO YOU MEASURE CURRENT.	100	100	100
B 58 B1-07 DO YOU USE MULTIMETERS.	100	100	100
B 59 B1-08 DO YOU DIRECTLY USE A QUANTITY OF CHARGE CALLED A COULOMB.	7	7	8
B 60 B1-09 DO YOU READ SCHEMATICS.	100	100	100

MULTIMETER USES

TASK GROUP SUMMARY  
PERCENT MEMBERS PERFORMING

DY-TSK

	SPC	SPC	SPC	SPC	ALTERNATING CURRENT
	151	152	154		
B 61 82-01 DO YOU USE OR REFER TO THE TERM EFFECTIVE VOLTAGE (RMS)?	71	71	69		
B 62 82-02 DO YOU USE OR REFER TO THE TERM PEAK TO PEAK VOLTAGE.	93	93	92		
B 63 82-03 DO YOU USE OR REFER TO THE TERM AVERAGE VOLTAGE (DC).	79	79	77		
B 64 82-04 DO YOU USE OR REFER TO THE TERM WAVE LENGTH.	79	79	77		
B 65 82-05 DO YOU USE OR REFER TO THE TERM FREQUENCY.	100	100	100		
B 66 82-06 DO YOU USE OR REFER TO THE TERM INSTANTANEOUS VALUE.	36	36	31		
B 67 83-01 DO YOU WORK WITH INDUCTORS OR CIRCUITS CONTAINING INDUCTORS, CHOKES, OR CHOKE COILS IN YOUR PRESENT JOB.	86	86	85		
B 68 83-02 DO YOU INSPECT INDUCTORS.	71	71	69		INDUCTORS AND INDUCTIVE REACTANCE
B 69 83-03 DO YOU CLEAN INDUCTORS.	57	57	54		
B 70 83-04 DO YOU ADJUST INDUCTORS.	86	86	85		
B 71 83-05 DO YOU REMOVE OR REPLACE INDUCTORS.	71	71	69		
B 72 83-06 DO YOU USE OR REFER TO INDUCTANCE.	79	79	77		
B 73 83-07 DO YOU USE OR REFER TO HENRIES.	71	71	69		
B 74 83-08 DO YOU USE OR REFER TO INDUCTIVE REACTANCE.	0	0	0		
B 75 83-09 DO YOU USE OR REFER TO COPPER LOSS IN INDUCTORS.	0	0	0		
B 76 83-10 DO YOU USE OR REFER TO HYSTERESIS LOSS IN INDUCTORS.	0	0	0		
B 77 83-11 DO YOU USE OR REFER TO EDDY CURRENT LOSS IN INDUCTORS.	0	0	0		
B 78 83-12 DO YOU USE OR REFER TO THE GENERAL RULE THAT INDUCTANCE IS PROPORTIONAL TO THE SQUARE OF THE NUMBER OF TURNS OF THE COIL.	14	14	15		
B 79 82-13 DO YOU USE OR REFER TO THE GENERAL RULE THAT THE INDUCTANCE OF A COIL IS DIRECTLY PROPORTIONAL TO THE CROSS SECTIONAL AREA OF THE CORE.	14	14	15		
B 80 82-14 DO YOU USE OR REFER TO THE GENERAL RULE THAT THE INDUCTANCE OF A COIL IS INVERSELY PROPORTIONAL TO ITS LENGTH.					
B 81 82-15 DO YOU USE OR REFER TO THE GENERAL RULE THAT THE INDUCTANCE OF A COIL IS DIRECTLY PROPORTIONAL TO THE PERMEABILITY OF THE CORE MATERIAL.	21	21	23		
B 82 82-16 DO YOU CALCULATE INDUCTANCE FOR PARTICULAR INDUCTORS USING FORMULAS.	21	21	15		
B 83 83-17 DO YOU CALCULATE THE TOTAL INDUCTANCE FOR INDUCTANCE IN SERIES.	29	29	23		
B 84 83-18 DO YOU CALCULATE THE TOTAL INDUCTANCE FOR INDUCTORS IN PARALLEL.	29	29	23		
B 85 83-19 DO YOU CALCULATE THE TOTAL INDUCTANCE FOR INDUCTORS IN SERIES-PARALLEL CIRCUITS.	29	29	23		
B 86 83-20 DO YOU USE OR REFER TO THE GENERAL RULE THAT CURRENT LAGS VOLTAGE IN AC INDUCTOR CIRCUITS.	57	57	54		
B 87 83-21 DO YOU CALCULATE INDUCTIVE REACTANCE.	36	36	31		
B 88 83-22 DO YOU USE OR REFER TO THE GENERAL RULE THAT INDUCTIVE REACTANCE IS DIRECTLY PROPORTIONAL TO FREQUENCY.	43	43	38		
B 89 83-23 DO YOU WORK WITH POWER INDUCTORS.	79	79	77		
B 90 83-24 DO YOU WORK WITH AUDIO FREQUENCY INDUCTORS.	43	43	38		
B 91 83-25 DO YOU WORK WITH RADIO FREQUENCY INDUCTORS.	79	79	77		



PCT MBRS RESPONDING 'YES' BY SELECTED GRPS

TASK GROUP SUMMARY  
PERCENT MEMBERS PERFORMING

DY-TSK

	SPC	SPC	SPC
	151	152	154
C 92 C1-01 DO YOU WORK WITH CAPACITORS OR CIRCUITS CONTAINING CAPACITORS IN YOUR PRESENT JOB.	86	86	85
C 93 C1-02 DO YOU INSPECT CAPACITORS.	93	93	92
C 94 C1-03 DO YOU CLEAN CAPACITORS.	79	79	77
C 95 C1-04 DO YOU ADJUST CAPACITORS.	100	100	100
C 96 C1-05 DO YOU TEST CAPACITORS.	71	71	69
C 97 C1-06 DO YOU DISCHARGE CAPACITORS.	100	100	100
C 98 C1-07 DO YOU REMOVE OR REPLACE CAPACITORS.	100	100	100
C 99 C1-08 DO YOU USE OR REFER TO DISTRIBUTED CAPACITANCE.	43	43	38
C 100 C1-09 DO YOU USE OR REFER TO ORBITAL STRESS OF ELECTRONS IN A DIELECTRIC.	7	7	8
C 101 C1-10 DO YOU USE OR REFER TO FARADS, MICROFARADS, OR PICOFARADS.	93	93	92
C 102 C1-11 DO YOU USE OR REFER TO CAPACITANCE.	100	100	100
C 103 C1-12 DO YOU USE OR REFER TO DIELECTRIC CONSTANT	29	29	23
C 104 C1-13 DO YOU USE OR REFER TO WORKING VOLTAGE RATING OF CAPACITORS.	93	93	92
C 105 C1-14 DO YOU USE OR REFER TO CAPACITIVE REACTANCE	50	50	46
C 106 C1-15 DO YOU USE OR REFER TO CAPACITOR COLOR CODES	71	71	69
C 107 C1-16 DO YOU WORK WITH CAPACITORS IN DC CIRCUITS	93	93	92
C 108 C1-17 DO YOU WORK WITH CAPACITORS IN AC CIRCUITS	100	100	100
C 109 C1-18 DO YOU WORK WITH CAPACITORS IN CIRCUITS WITH BOTH DC AND AC	100	100	100
C 110 C1-19 DO YOU WORK WITH CAPACITORS IN DON'T REMEMBER WHICH CIRCUITS	14	14	15
C 111 C1-20 DO YOU CALCULATE CAPACITANCE FOR PARTICULAR CAPACITORS USING FORMULAS	21	21	23
C 112 C1-21 DO YOU USE OR REFER TO THE GENERAL RULE THAT CAPACITANCE OF A CAPACITOR IS DIRECTLY PROPORTIONAL TO THE DIELECTRIC CONSTANT	14	14	8
C 113 C1-22 DO YOU USE OR REFER TO THE GENERAL RULE THAT CAPACITANCE OF A CAPACITOR IS INVERSELY PROPORTIONAL TO THE DIELECTRIC THICKNESS	21	21	15
C 114 C1-23 DO YOU CALCULATE THE TOTAL CAPACITANCE OF CAPACITORS IN SERIES	43	43	38
C 115 C1-24 DO YOU CALCULATE THE TOTAL CAPACITANCE OF CAPACITORS IN PARALLEL	43	43	38
C 116 C1-25 DO YOU CALCULATE THE TOTAL CAPACITANCE OF CAPACITORS IN SERIES-PARALLEL CIRCUITS	43	43	38
C 117 C1-26 DO YOU USE OR REFER TO THE GENERAL RULE THAT CURRENT DOES NOT FLOW THROUGH CAPACITORS, IT ONLY APPEARS TO DO SO	64	64	62
C 118 C1-27 DO YOU USE OR REFER TO THE GENERAL RULE THAT CURRENT LEADS VOLTAGE IN AC CAPACITOR CIRCUITS	57	57	62
C 119 C1-28 DO YOU USE OR REFER TO THE GENERAL RULE THAT CAPACITIVE REACTANCE IS INVERSELY PROPORTIONAL TO FREQUENCY	50	50	54
C 120 C1-29 DO YOU CALCULATE CAPACITIVE REACTANCE	29	29	23

CAPACITORS AND  
CAPACITIVE REACTANCE



PCT MBRS RESPONDING 'YES' BY SELECTED GRPS

TASK GROUP SUMMARY  
PERCENT MEMBERS PERFORMING

DY-TSK

SPC SPC SPC  
151 152 154

C 121 C1-30 DO YOU WORK WITH ROTOR-STATOR (VARIABLE) CAPACITORS  
C 122 C1-31 DO YOU WORK WITH COMPRESSION (TRIMMER) CAPACITORS  
C 123 C1-32 DO YOU WORK WITH ELECTROLYTIC (FIXED) CAPACITORS  
C 124 C1-33 DO YOU WORK WITH PAPER (FIXED) CAPACITORS  
C 125 C1-34 DO YOU WORK WITH MICA (FIXED) CAPACITORS  
C 126 C1-35 DO YOU WORK WITH CERAMIC (FIXED) CAPACITORS  
C 127 C1-36 DO YOU WORK WITH DON'T REMEMBER WHICH TYPE OF CAPACITORS

C 128 C2-01 DO YOU WORK WITH TRANSFORMERS IN YOUR PRESENT JOB

C 129 C2-02 DO YOU INSPECT TRANSFORMERS

C 130 C2-03 DO YOU CLEAN TRANSFORMERS

C 131 C2-04 DO YOU ADJUST TRANSFORMERS

C 132 C2-05 DO YOU TROUBLESHOOT TRANSFORMERS

C 133 C2-06 DO YOU REMOVE OR REPLACE COMPLETE TRANSFORMERS

C 134 C2-07 DO YOU REMOVE OR REPLACE TRANSFORMER PARTS, SUCH AS THE PRIMARY WINDING

C 135 C2-08 DO YOU MAKE A DISTINCTION BETWEEN MUTUAL INDUCTANCE AND MUTUAL INDUCTANCE (M)

C 136 C2-09 DO YOU USE THE SYMBOL FOR MUTUAL INDUCTANCE, M

C 137 C2-10 DO YOU REFER TO OR USE THE COEFFICIENT OF COUPLING WHEN WORKING WITH TRANSFORMERS

C 138 C2-11 DO YOU CALCULATE TURNS RATIOS FOR TRANSFORMERS USING CURRENT OR VOLTAGE RATIOS

C 139 C2-12 DO YOU REFER TO REFLECTED IMPEDANCE WHEN WORKING WITH TRANSFORMERS

C 140 C2-13 DO YOU CALCULATE IMPEDANCE INTERACTIONS FOR TRANSFORMERS

C 141 C2-14 DO YOU WORK WITH AUTOTRANSFORMERS

C 142 C2-15 DO YOU WORK WITH POWER TRANSFORMERS

C 143 C2-16 DO YOU WORK WITH AUDIO TRANSFORMERS

C 144 C2-17 DO YOU WORK WITH RADIO FREQUENCY TRANSFORMERS

C 145 C2-18 DO YOU WORK WITH DON'T REMEMBER WHAT TYPE OF TRANSFORMERS

C 146 C2-19 DO YOU CHECK TRANSFORMERS FOR OPEN WINDINGS BY MEASURING RESISTANCE

C 147 C2-20 DO YOU CHECK TRANSFORMERS FOR SHORTED WINDINGS BY MEASURING RESISTANCE

C 148 C2-21 DO YOU CHECK TRANSFORMERS FOR SHORTED WINDINGS BY MEASURING OUTPUT VOLTAGES

C 149 C2-22 DO YOU MEASURE RESISTANCE OF TRANSFORMER WINDINGS TO DETERMINE WHETHER A TRANSFORMER HAS A STEP-UP OR STEP-DOWN TURNS RATIO

C 150 C2-23 DO YOU MEASURE OUTPUT VOLTAGE OF TRANSFORMERS TO DETERMINE WHETHER A TRANSFORMER HAS A STEP-UP OR STEP-DOWN TURNS RATIO

C 151 C2-24 DO YOU REFER TO BASIC TRANSFORMER SCHEMATIC SYMBOLS FOR TRANSFORMERS

TRANSFORMERS

86 84 85  
93 93 92

71 71 69  
71 71 69

84 84 92  
93 93 92

14 14 15  
7 7 8

7 7 8  
7 7 8

21 21 23  
21 21 23

7 7 8  
29 29 23

93 93 92  
36 36 31

71 71 69  
14 14 15

93 93 92  
86 86 85

86 86 85  
29 29 23

64 64 62  
86 86 85

PCT MBRS RESPONDING 'YES' BY SELECTED GRPS

TASK GROUP SUMMARY  
PERCENT MEMBERS PERFORMING

	SPC	SPC	SPC
	151	152	154
UY-TSK			
C 152 C2-25 DO YOU REFER TO MULTIPLE SECONDARY-WINDINGS SCHEMATIC SYMBOLS FOR TRANSFORMERS	86	86	85
C 153 C2-26 DO YOU REFER TO MULTIPLE TAP SCHEMATIC SYMBOLS FOR TRANSFORMERS	86	86	85
C 154 C2-27 DO YOU REFER TO CENTER TAP SCHEMATIC SYMBOLS FOR TRANSFORMERS	93	93	92
C 155 C2-28 DO YOU REFER TO AIR CORE SCHEMATIC SYMBOLS FOR TRANSFORMERS	79	79	77
C 156 C2-29 DO YOU REFER TO IRON CORE SCHEMATIC SYMBOLS FOR TRANSFORMERS	86	86	85
C 157 C2-30 DO YOU REFER TO COMBINATIONS OF THE ABOVE SCHEMATIC SYMBOLS FOR TRANSFORMERS	93	93	92
C 158 C2-31 DO YOU DETERMINE PHASE RELATIONSHIPS BETWEEN SECONDARY AND PRIMARY VOLTAGES OF TRANSFORMERS USING SCHEMATIC SYMBOLS	64	64	62
C 159 C2-32 DO YOU DETERMINE OR REFER TO THE TYPE OF CORE IN TRANSFORMERS YOU WORK WITH	50	50	46
C 160 C2-33 DO YOU REFER TO OR USE THE GENERAL RULE THAT THE TURNS RATIO OF A TRANSFORMER IS EQUAL TO THE VOLTAGE RATIO	43	43	38
C 161 C2-34 DO YOU USE OR REFER TO STEP-UP OR STEP-DOWN RATIOS FOR TRANSFORMERS	79	79	77
C 162 C2-35 DO YOU CALCULATE VOLTAGE RATIOS FOR TRANSFORMERS USING TURNS RATIOS	21	21	23
C 163 C2-36 DO YOU CALCULATE CURRENT RATIOS FOR TRANSFORMERS USING TURNS RATIOS	21	21	23
C 164 C2-37 DOES YOUR JOB INVOLVE ANY TASKS DEALING WITH THREE PHASE TRANSFORMERS	64	64	69
C 165 C2-38 DO YOU INSPECT THREE PHASE TRANSFORMERS	57	57	62
C 166 C2-39 DO YOU CLEAN OR LUBRICATE THREE PHASE TRANSFORMERS	43	43	46
C 167 C2-40 DO YOU ADJUST THREE PHASE TRANSFORMERS	43	43	46
C 168 C2-41 DO YOU TROUBLESHOOT THREE PHASE TRANSFORMERS	54	64	69
C 169 C2-42 DO YOU REMOVE OR REPLACE COMPLETE THREE PHASE TRANSFORMERS	64	64	69
C 170 C2-43 DO YOU REMOVE OR REPLACE THREE PHASE TRANSFORMER PARTS SUCH AS WINDINGS	14	14	15
C 171 C3-01 DO YOU USE OR REFER TO PERMANENT MAGNETS	86	86	85
C 172 C3-02 DO YOU USE OR REFER TO TEMPORARY MAGNETS	50	50	46
C 173 C3-03 DO YOU USE OR REFER TO RETENTIVITY OF MAGNETIC MATERIALS	21	21	23
C 174 C3-04 DO YOU USE OR REFER TO RELUCTANCE OF MAGNETIC MATERIALS	21	21	23
C 175 C3-05 DO YOU USE OR REFER TO PERMEABILITY OF MAGNETIC MATERIALS	21	21	23
C 176 C3-06 DO YOU USE OR REFER TO RESIDUAL MAGNETISM	43	43	46
C 177 C3-07 DO YOU USE OR REFER TO MAGNETIC LINES OF FORCE OR FLUX	50	50	46
C 178 C3-08 DO YOU USE OR REFER TO WEBER'S THEORY OF MAGNETISM	0	0	0

MAGNETISM

TASK GROUP SUMMARY  
PERCENT MEMBERS PERFORMING

UY-TSK

SPC SPC SPC  
151 152 154

C 179 C3-09 DO YOU USE OR REFER TO DOMAIN THEORY OF MAGNETISM  
C 180 C3-10 DO YOU USE OR REFER TO MAGNETIC INDUCTION  
C 181 C3-11 DO YOU USE OR REFER TO FLUX DENSITY  
C 182 C3-12 DO YOU USE OR REFER TO THE GENERAL RULE THAT FOR  
MAGNETIC POLES, LIKE POLES REPEL AND UNLIKE POLES ATTRACT  
C 183 C3-13 DO YOU USE THE LEFT HAND THUMB RULE TO FIND THE  
DIRECTION OF MAGNETIC FIELDS ABOUT STRAIGHT WIRES  
C 184 C3-14 DO YOU USE THE LEFT HAND THUMB RULE TO FIND THE NORTH  
POLE OF A CURRENT CARRYING COIL

D 185 D1-01 DO YOU WORK WITH RC, LR, RCL CIRCUITS IN YOUR  
PRESENT JOB

D 186 D1-02 DO YOU USE OR REFER TO VECTORS WHEN WORKING WITH RCL  
CIRCUITS

D 187 D1-03 DO YOU USE OR REFER TO PYTHAGOREAN THEOREM WHEN  
WORKING WITH RCL CIRCUITS

D 188 D1-04 DO YOU USE OR REFER TO SINE WHEN WORKING WITH RCL  
CIRCUITS

D 189 D1-05 DO YOU USE OR REFER TO COSINE WHEN WORKING WITH RCL  
CIRCUITS

D 190 D1-06 DO YOU USE OR REFER TO TANGENT WHEN WORKING WITH RCL  
CIRCUITS

D 191 D1-07 DO YOU USE OR REFER TO WATTS WHEN WORKING WITH RCL  
CIRCUITS

D 192 D1-08 DO YOU USE OR REFER TO TRUE POWER (PT) WHEN WORKING  
WITH RCL CIRCUITS

D 193 D1-09 DO YOU USE OR REFER TO MAXIMUM POWER (PM) WHEN  
WORKING WITH RCL CIRCUITS

D 194 D1-10 DO YOU USE OR REFER TO AVERAGE POWER (PAVE) WHEN  
WORKING WITH RCL CIRCUITS

D 195 D1-11 DO YOU USE OR REFER TO APPARENT POWER (PA) WHEN  
WORKING WITH RCL CIRCUITS

D 196 D1-12 DO YOU USE OR REFER TO POWER FACTOR (PF) WHEN WORKING  
WITH RCL CIRCUITS

D 197 D1-13 DO YOU USE OR REFER TO RESONANT CIRCUITS WHEN  
WORKING WITH RCL CIRCUITS

D 198 D1-14 DO YOU USE OR REFER TO BANDWIDTH WHEN WORKING WITH  
RCL CIRCUITS

D 199 D1-15 DO YOU USE OR REFER TO SELECTIVITY WHEN WORKING WITH  
RCL CIRCUITS

D 200 D1-16 DO YOU USE OR REFER TO RESONANT FREQUENCY WHEN  
WORKING WITH RCL CIRCUITS

D 201 D1-17 DO YOU USE OR REFER TO HALF POWER POINTS WHEN  
WORKING WITH RCL CIRCUITS

D 202 D1-18 DO YOU USE OR REFER TO BANDPASS REGION WHEN WORKING  
WITH RCL CIRCUITS

D 203 D1-19 DO YOU USE OR REFER TO CIRCUIT Q WHEN WORKING WITH  
RCL CIRCUITS

RCL CIRCUITS

64 64 62

14 14 15

7 7 8

21 21 23

21 21 23

14 14 15

57 57 54

21 21 23

50 50 54

57 57 54

14 14 15

29 29 31

64 64 62

50 50 46

57 57 54

71 71 69

57 57 54

43 43 38

21 21 15

PCT MBRS RESPONDING 'YES' BY SELECTED SRPS

TASK GROUP SUMMARY  
PERCENT MEMBERS PERFORMING

DY-TSK

	SPC	SPC	SPC
D 204 D1-20 DO YOU USE OR REFER TO TANK CIRCUITS WHEN WORKING WITH RCL CIRCUITS	151	152	154
D 205 D1-21 DO YOU DETERMINE VALUES OF TRIGONOMETRIC FUNCTIONS USING FORMULAS	7	7	8
D 206 D1-22 DO YOU DRAW VOLTAGE, CURRENT, OR IMPEDANCE VECTOR DIAGRAMS FOR CIRCUITS	21	21	23
D 207 D1-23 DO YOU CALCULATE TOTAL IMPEDANCE FOR CAPACITIVE CIRCUITS	14	14	15
D 208 D1-24 DO YOU CALCULATE PHASE ANGLES BETWEEN IMPEDANCE AND RESISTANCE IN CAPACITIVE CIRCUITS	14	14	15
D 209 D1-25 DO YOU CALCULATE TOTAL IMPEDANCE FOR SERIES RCL CIRCUITS	14	14	15
D 210 D1-26 DO YOU CALCULATE IMPEDANCE ANGLES FOR SERIES RCL CIRCUITS	7	7	8
D 211 D1-27 DO YOU CALCULATE APPARENT POWER (PA) FOR SERIES RCL CIRCUITS	14	14	15
D 212 D1-28 DO YOU CALCULATE TRUE POWER (PT) FOR SERIES RCL CIRCUITS	7	7	8
D 213 D1-29 DO YOU CALCULATE POWER FACTORS (PF) FOR SERIES RCL CIRCUITS	14	14	15
D 214 D1-30 DO YOU CALCULATE TOTAL CURRENT FOR PARALLEL RCL CIRCUITS	7	7	8
D 215 D1-31 DO YOU CALCULATE IMPEDANCE ANGLES FOR PARALLEL RCL CIRCUITS	7	7	8
D 216 D1-32 DO YOU CALCULATE TOTAL IMPEDANCE FOR PARALLEL RCL CIRCUITS USING THE ASSUMED VOLTAGE METHOD	7	7	8
D 217 D1-33 DO YOU CALCULATE TOTAL IMPEDANCE FOR PARALLEL RCL CIRCUITS USING OHM'S LAW	7	7	8
D 218 D1-34 DO YOU CHECK CAPACITORS USING OHMMETERS	64	64	62
D 219 D1-35 DO YOU CHECK CAPACITORS USING SUBSTITUTION	50	50	46
D 220 D1-36 DO YOU CHECK INDUCTORS USING OHMMETERS	50	50	46
D 221 D1-37 DO YOU CHECK INDUCTORS USING SUBSTITUTION	43	43	38
D 222 D1-38 DO YOU USE OR REFER TO THE GENERAL RULE THAT $\theta = 1$ , AND $PA = PT$ FOR RESONANT CIRCUITS	7	7	8
D 223 D1-39 DO YOU CALCULATE RESONANT FREQUENCIES FOR RCL CIRCUITS	14	14	15
D 224 D1-40 DO YOU USE OR REFER TO THE GENERAL RULE THAT IMPEDANCE IS MINIMUM AND CURRENT MAXIMUM AT THE RESONANT FREQUENCY FOR SERIES RCL CIRCUITS	36	36	38
D 225 D1-41 DO YOU USE OR REFER TO THE GENERAL RULE THAT LINE CURRENT IS MINIMUM AND IMPEDANCE MAXIMUM AT RESONANT FREQUENCY FOR PARALLEL RCL CIRCUITS	29	29	31
D 226 D1-42 DO YOU USE OR REFER TO THE GENERAL RULE THAT HALF POWER POINTS ARE AT 70.7 PERCENT OF THE PEAK CURRENT VALUE	36	36	31
D 227 D1-43 DO YOU USE OR REFER TO THE GENERAL RULE THAT BANDWIDTH IS INVERSELY PROPORTIONAL TO Q	21	21	15
D 228 D1-44 DO YOU DETERMINE HOW CHANGES IN FREQUENCY, RESISTANCE, CAPACITANCE, OR INDUCTANCE WILL AFFECT CURRENT OR PHASE ANGLES FOR RCL CIRCUITS	21	21	15



TASK GROUP SUMMARY  
PERCENT MEMBERS PERFORMING

DY-TSK

	SPC	SPC	SPC	SPC	
	151	152	154		
U 229 02-01 IN YOUR PRESENT JOB, DO YOU WORK WITH, USE, OR REFER TO SERIES OR PARALLEL RESONANT CIRCUITS OR TIME CONSTANTS	50	50	46		SERIES AND PARALLEL RESONANCE (TIME CONSTANTS)
U 230 02-02 DO YOU WORK WITH, USE, OR REFER TO TIME CONSTANTS	50	50	46		
U 231 02-03 DO YOU WORK WITH, USE, OR REFER TO AVAILABLE VOLTAGE	36	36	38		
U 232 02-04 DO YOU WORK WITH, USE, OR REFER TO TRANSIENT INTERVALS	36	36	38		
U 233 02-05 DO YOU USE OR REFER TO THE GENERAL RULE THAT A CAPACITOR IS FULLY CHARGED (OR DISCHARGED) AFTER FIVE (5) TIME CONSTANTS (TC)	29	29	31		
U 234 02-06 DO YOU USE OR REFER TO UNIVERSAL TIME CONSTANT CHARTS	7	7	8		
U 235 02-07 DO YOU USE EQUATIONS OR FORMULAS TO DETERMINE CIRCUIT CURRENT OR COMPONENT VOLTAGES AFTER A SPECIFIC TIME FOR RC OR LR CIRCUITS	14	14	15		
U 236 02-08 DO YOU USE EQUATIONS OR FORMULAS TO DETERMINE THE TIME REQUIRED FOR CIRCUIT CURRENT OR COMPONENT VOLTAGES TO REACH SPECIFIC VALUES FOR RC OR LR CIRCUITS	14	14	15		
U 237 02-09 DO YOU USE EQUATIONS OR FORMULAS TO DETERMINE COMPONENT VALUES REQUIRED FOR CIRCUIT CURRENT AND COMPONENT VOLTAGES TO REACH SPECIFIC VALUES IN SPECIFIC TIMES	7	7	8		
U 238 02-10 DO YOU USE OR REFER TO THE GENERAL RULE THAT CURRENT IN LR CIRCUITS REACHES ITS MINIMUM VALUE (OR ZERO) AFTER FIVE (5) TIME CONSTANTS	21	21	23		
U 239 03-01 DO YOU WORK WITH CIRCUITS USED AS FILTERS IN YOUR PRESENT JOB	86	86	85		FILTERS
U 240 03-02 DO YOU INSPECT FILTER CIRCUITS	86	86	85		
U 241 03-03 DO YOU CLEAN FILTER CIRCUITS	57	57	54		
U 242 03-04 DO YOU ADJUST OR ADJUST FILTER CIRCUITS	64	64	62		
U 243 03-05 DO YOU TROUBLESHOOT TO THE FILTER CIRCUIT LEVEL	64	64	62		
U 244 03-06 DO YOU TROUBLESHOOT TO COMPONENT PARTS	57	57	54		
U 245 03-07 DO YOU REMOVE OR REPLACE THE COMPLETE FILTER CIRCUIT	86	86	85		
U 246 03-08 DO YOU REMOVE OR REPLACE FILTER CIRCUIT COMPONENT PARTS	57	57	54		
U 247 03-09 DO YOU WORK WITH LOW PASS FILTERS	64	64	62		
U 248 03-10 DO YOU WORK WITH HIGH PASS FILTERS	64	64	62		
U 249 03-11 DO YOU WORK WITH BANDPASS FILTERS	64	64	62		
U 250 03-12 DO YOU WORK WITH BAND-REJECT FILTERS	50	50	46		
U 251 03-13 DON'T REMEMBER WHICH TYPE OF FILTER YOU WORK WITH	29	29	31		
U 252 03-14 DO YOU WORK WITH L-SECTION FILTER CONFIGURATION	50	50	46		
U 253 03-15 DO YOU WORK WITH T-SECTION FILTER CONFIGURATION	43	43	38		
U 254 03-16 DO YOU WORK WITH PI-SECTION FILTER CONFIGURATION	36	36	31		
U 255 03-17 DON'T REMEMBER WHICH TYPE FILTER CONFIGURATION	36	36	38		
U 256 03-18 DO THE FILTERS YOU WORK WITH USE PARALLEL RESONANT CIRCUITS	50	50	46		
U 257 03-19 DO THE FILTERS YOU WORK WITH USE SERIES-PARALLEL CIRCUITS	50	50	46		
U 258 03-20 DO THE FILTERS YOU WORK WITH USE SERIES RESONANT CIRCUITS	50	50	46		



TASK GROUP SUMMARY  
PERCENT MEMBERS PERFORMING

## DY-TSK

SPC SPC SPC  
151 152 154

D 259 03-21 DON'T REMEMBER WHICH TYPE OF BASIC CIRCUIT  
D 260 03-22 DO YOU USE EQUATIONS OR FORMULAS TO DETERMINE  
CAPACITANCE OR INDUCTANCE VALUES REQUIRED FOR SPECIFIC  
FILTERS

SPC SPC SPC  
50 50 54  
14 14 15

E 261 E1-01 DO YOU WORK WITH COUPLING DEVICES IN YOUR PRESENT JOB  
E 262 E1-02 DO YOU IDENTIFY ON SCHEMATIC DIAGRAMS AND RELATE TO  
THE ACTUAL CIRCUITRY THE COMPONENTS ASSOCIATED WITH RC  
COUPLING

COUPLING

SPC SPC SPC  
71 71 69  
64 64 62

E 263 E1-03 DO YOU IDENTIFY ON SCHEMATIC DIAGRAMS AND RELATE TO  
THE ACTUAL CIRCUITRY THE COMPONENTS ASSOCIATED WITH  
IMPEDANCE COUPLING

SPC SPC SPC  
71 71 69  
71 71 69

E 264 E1-04 DO YOU IDENTIFY ON SCHEMATIC DIAGRAMS AND RELATE TO  
THE ACTUAL CIRCUITRY THE COMPONENTS ASSOCIATED WITH  
TRANSFORMER COUPLING

SPC SPC SPC  
64 64 62  
71 71 69

E 265 E1-05 DO YOU TROUBLESHOOT CIRCUITS WHICH HAVE COMPONENTS  
WHICH PERFORM RC COUPLING  
E 266 E1-06 DO YOU TROUBLESHOOT CIRCUITS WHICH HAVE COMPONENTS  
WHICH PERFORM IMPEDANCE COUPLING

SPC SPC SPC  
71 71 69  
71 71 69

E 267 E1-07 DO YOU TROUBLESHOOT CIRCUITS WHICH HAVE COMPONENTS  
WHICH PERFORM TRANSFORMER COUPLING  
E 268 E1-08 DO YOU WORK WITH DIRECTLY COUPLED CIRCUITS

SPC SPC SPC  
50 50 46  
50 50 46

E 269 E1-09 DO YOU WORK WITH CAPACITIVE-RESISTIVE COUPLED  
CIRCUITS  
E 270 E1-10 DO YOU WORK WITH CAPACITIVE-INDUCTIVE COUPLED  
CIRCUITS

SPC SPC SPC  
43 43 38  
57 57 54

E 271 E1-11 DO YOU WORK WITH TRANSFORMER COUPLED CIRCUITS  
E 272 E1-12 DON'T REMEMBER WHICH TYPE OF COUPLING CIRCUITS  
E 273 E2-01 IN YOUR PRESENT JOB, DO YOU PERFORM SOLDERING

SPC SPC SPC  
29 29 31  
100 100 100

TECHNIQUES OR INSPECT OR EVALUATE SOLDERED CONNECTIONS  
E 274 E2-02 DO YOU SELECT TYPE OF SOLDER TO USE  
E 275 E2-03 DO YOU ADD FLUX TO CONNECTIONS

SPC SPC SPC  
86 86 85  
100 100 100

E 276 E2-04 DO YOU CLEAN CONNECTIONS USING SOLVENTS  
E 277 E2-05 DO YOU STRIP INSULATION FROM WIRES  
E 278 E2-06 DO YOU CONNECT OR DISCONNECT HEAT SINKS

SPC SPC SPC  
100 100 100  
93 93 92

E 279 E2-07 DO YOU BEND OR SHAPE WIRES OR LEADS  
E 280 E2-08 DO YOU CUT WIRES  
E 281 E2-09 DO YOU FILE OR SHAPE SOLDERING IRON TIPS

SPC SPC SPC  
100 100 100  
93 93 92

E 282 E2-10 DO YOU TIN SOLDERING IRON TIPS  
E 283 E2-11 DO YOU CLEAN SOLDERING IRON TIPS  
E 284 E2-12 DO YOU CLEAN ELECTRICAL SURFACES USING ERASERS

SPC SPC SPC  
100 100 100  
71 71 69

E 285 E2-13 DO YOU TIN OR PRE-TIN CONDUCTORS  
E 286 E2-14 DO YOU INSPECT SOLDERED CONNECTIONS  
E 287 E2-15 DO YOU DESOLDER CONNECTIONS BY WICKING

SPC SPC SPC  
100 100 100  
93 93 92

E 288 E2-16 DO YOU DESOLDER CONNECTIONS USING VACUUM DESOLDERING  
TOOLS  
E 289 E2-17 DO YOU CUT COMPONENT LEADS TO REMOVE COMPONENTS

SPC SPC SPC  
79 79 77  
100 100 100

E 290 E2-18 DO YOU CRUSH COMPONENTS FOR REMOVAL

SPC SPC SPC  
43 43 46  
43 43 46

SOLDERING

PCT MBS RESPONDING 'YES' BY SELECTED GRPS

TASK GROUP SUMMARY  
PERCENT MEMBERS PERFORMING

QY-TSK

SPC SPC SPC  
151 152 154

E 291 E2-19 DO YOU MAKE HARDWIRE CONNECTIONS  
E 292 E2-20 DO YOU MAKE PRINTED CIRCUIT BOARD CONNECTIONS  
E 293 E2-21 DO YOU SOLDER PASSIVE COMPONENTS SUCH AS RESISTORS OR CAPACITORS ON PRINTED CIRCUIT BOARDS  
E 294 E2-22 DO YOU SOLDER ACTIVE COMPONENTS SUCH AS SOLID-STATE DIODES OR TRANSISTORS ON PRINTED CIRCUIT BOARDS

E 295 E3-01 DO YOU WORK WITH RELAYS ON YOUR PRESENT JOB

E 296 E3-02 DO YOU ADJUST RELAYS

E 297 E3-03 DO YOU CLEAN RELAYS

E 298 E3-04 DO YOU INSPECT RELAYS

E 299 E3-05 DO YOU REMOVE OR REPLACE COMPLETE RELAYS

E 300 E3-06 DO YOU REMOVE OR REPLACE PARTS ON RELAYS

E 301 E3-07 DO YOU TROUBLESHOOT RELAYS

E 302 E3-08 DO YOU STRAIGHTEN RELAY CONTACTS

E 303 E3-09 DO YOU PERFORM TASKS ON RELAY CONTACTS

E 304 E3-10 DO YOU PERFORM TASKS ON RELAY COILS

E 305 E3-11 DO YOU PERFORM TASKS ON RELAY ARMATURES

E 306 E3-12 DO YOU PERFORM TASKS ON RELAY SPRINGS

E 307 E3-13 DO YOU USE OR REFER TO SINGLE POLE, SINGLE THROW (SPST), NORMALLY OPEN (NO) SCHEMATIC SYMBOLS FOR RELAYS

E 308 E3-14 DO YOU USE OR REFER TO SINGLE POLE, DOUBLE THROW (SPDT), NORMALLY CLOSED (NC) SCHEMATIC SYMBOLS FOR RELAYS

E 309 E3-15 DO YOU USE OR REFER TO SINGLE POLE, SINGLE THROW (SPST), NORMALLY CLOSED (NC) SCHEMATIC SYMBOLS FOR RELAYS

E 310 E3-16 DO YOU USE OR REFER TO SINGLE POLE, DOUBLE THROW (SPDT) SCHEMATIC SYMBOLS FOR RELAYS

E 311 E3-17 DO YOU USE OR REFER TO DOUBLE POLE, DOUBLE THROW (DPDT) SCHEMATIC SYMBOLS FOR RELAYS

E 312 E3-18 DO YOU USE OR REFER TO OTHER RELAY SYMBOLS SCHEMATIC SYMBOLS FOR RELAYS

E 313 E3-19 DO YOU CHECK ELECTRICAL CONTINUITY OF COILS BY MEASURING RESISTANCE

F 314 F1-01 IN YOUR PRESENT JOB, DO YOU PERFORM ANY TASKS DEALING WITH MICROPHONES

F 315 F1-02 DO YOU INSPECT MICROPHONES

F 316 F1-03 DO YOU CLEAN MICROPHONES

F 317 F1-04 DO YOU OPERATE MICROPHONES

F 318 F1-05 DO YOU TROUBLESHOOT AS FAR AS CHECKING WIRE CONNECTIONS BUT DO NOT TROUBLESHOOT DOWN TO COMPONENT PARTS OR MICROPHONES

F 319 F1-06 DO YOU TROUBLESHOOT DOWN TO MICROPHONE PARTS

F 320 F1-07 DO YOU REMOVE OR REPLACE COMPLETE MICROPHONES

F 321 F1-08 DO YOU REMOVE OR REPLACE MICROPHONE PARTS

F 322 F1-09 DO YOU PERFORM TASKS ON CARBON MICROPHONES

F 323 F1-10 DO YOU PERFORM TASKS ON CAPACITOR MICROPHONES

F 324 F1-11 DO YOU PERFORM TASKS ON CRYSTAL MICROPHONES

F 325 F1-12 DO YOU PERFORM TASKS ON DYNAMIC MICROPHONES

F 326 F1-13 DO YOU PERFORM TASKS ON VELOCITY RIBBON MICROPHONES

RELAYS

MICROPHONES

PCT MBRS RESPONDING 'YES' BY SELECTED GRPS

TASK GROUP SUMMARY  
PERCENT MEMBERS PERFORMING

QY-TSK		SPC SPC SPC	
		151	152 154
F 327 F2-01	IN YOUR PRESENT JOB, DO YOU PERFORM ANY TASKS DEALING WITH SPEAKERS	14	14 8
F 328 F2-02	DO YOU INSPECT SPEAKERS	14	14 8
F 329 F2-03	DO YOU CLEAN SPEAKERS	14	14 8
F 330 F2-04	DO YOU OPERATE SPEAKERS	14	14 8
F 331 F2-05	DO YOU TROUBLESHOOT AS FAR AS CHECKING WIRE CONNECTIONS BUT DO NOT TROUBLESHOOT DOWN TO COMPONENT PARTS OF SPEAKERS	14	14 8
F 332 F2-06	DO YOU TROUBLESHOOT DOWN TO SPEAKER PARTS	0	0 0
F 333 F2-07	DO YOU REMOVE OR REPLACE COMPLETE SPEAKERS	14	14 8
F 334 F2-08	DO YOU REMOVE OR REPLACE SPEAKER PARTS	0	0 0
F 335 F2-09	DO YOU PERFORM ANY TASKS ON SPEAKER CONES	0	0 0
F 336 F2-10	DO YOU PERFORM ANY TASKS ON SPEAKER SPIDERS	0	0 0
F 337 F2-11	DO YOU PERFORM ANY TASKS ON SPEAKER FIELD COILS	0	0 0
F 338 F2-12	DO YOU PERFORM ANY TASKS ON SPEAKER VOICE COILS	0	0 0
F 339 F2-13	DO YOU PERFORM ANY TASKS ON SPEAKER PERMANENT MAGNETS	0	0 0
F 340 F2-14	DO YOU PERFORM ANY TASKS ON SPEAKER ELECTROMAGNETS	0	0 0
F 341 F2-15	DO YOU PERFORM ANY TASKS ON SPEAKER SOFT IRON CORES	0	0 0
F 342 F3-01	DO YOU USE OSCILLOSCOPES IN YOUR PRESENT JOB	100	100 100
F 343 F3-02	DO YOU USE OSCILLOSCOPES TO PERFORM OPERATIONAL CHECKS	100	100 100
F 344 F3-03	DO YOU USE OSCILLOSCOPES TO PERFORM ALIGNMENTS OR ADJUSTMENTS	100	100 100
F 345 F3-04	DO YOU USE OSCILLOSCOPES TO TROUBLESHOOT ELECTRONIC CIRCUITS	100	100 100
F 346 F3-05	DO YOU USE OSCILLOSCOPES TO MEASURE FREQUENCY	100	100 100
F 347 F3-06	DO YOU USE OSCILLOSCOPES TO MEASURE TIME	93	93 92
F 348 F3-07	DO YOU USE OSCILLOSCOPES TO OBSERVE LISAJOUS PATTERNS	36	36 31
F 349 F3-08	DO YOU USE OSCILLOSCOPES TO OBSERVE SIGNALS WHILE UTILIZING ATTENUATOR PROBES	93	93 92
F 350 F3-09	DO YOU USE OSCILLOSCOPES TO MAKE FREQUENCY OR TIME MEASUREMENTS USING DELAY TIME MULTIPLIERS	71	71 69
F 351 F3-10	DO YOU USE OSCILLOSCOPES TO MEASURE AC VOLTAGE	86	86 85
F 352 F3-11	DO YOU USE OSCILLOSCOPES TO MEASURE OR OBSERVE SIGNALS AFTER FIRST ADJUSTING THE GAIN AND DC BAL CONTROLS	86	86 85
F 353 F3-12	DO YOU USE OSCILLOSCOPES TO MEASURE DC VOLTAGE	93	93 92
G 354 G1-01	DO YOU WORK WITH SEMICONDUCTOR DIODES IN YOUR PRESENT JOB	86	86 85
G 355 G1-02	DO YOU INSPECT DIODES	86	86 85
G 356 G1-03	DO YOU REMOVE OR REPLACE DIODES	86	86 85
G 357 G1-04	DO YOU CHECK DIODES USING AN INSTRUMENT	79	79 77
G 358 G1-05	DO YOU USE ENERGY LEVEL DIAGRAMS IN YOUR WORK WITH DIODES	7	7 8
G 359 G1-06	DO YOU USE PN JUNCTION DIODE CHARACTERISTIC CURVES, TOGETHER WITH VALUES OF FORWARD AND REVERSE BIAS VOLTAGE, TO COMPUTE FORWARD OR REVERSE LIAS RESISTANCE	7	7 8
G 360 G1-07	DO YOU COMPUTE FORWARD OR REVERSE BIAS RESISTANCE FOR DIODES	29	29 31

SPEAKERS

OSCILLOSCOPES

SEMICONDUCTOR  
DIODES

PCT MEMS RESPONDING 'YES' BY SELECTED CHPS

TASK GROUP SUMMARY  
PERCENT MEMBERS PERFORMING

0Y-TSK

SPC SPC SPC  
151 152 154

79 79 77

79 79 77

14 14 15

43 43 46

43 43 46

7 7 8

7 7 8

79 79 85

0 0 0

0 0 0

50 50 54

0 0 0

0 0 0

0 0 0

0 0 0

0 0 0

0 0 0

0 0 0

86 86 85

7 7 8

50 50 46

21 21 15

71 71 69

7 7 8

6 361 61-08 DO YOU USE OR REFER TO THE GENERAL RULE THAT TEMPERATURE CAN AFFECT THE OPERATION OF DIODES  
6 362 61-09 DO YOU IDENTIFY SEMICONDUCTOR DIODES AS OPPOSED TO OTHER ELECTRONIC COMPONENTS, SUCH AS RESISTORS, BASED ON THEIR PHYSICAL APPEARANCE  
6 363 61-10 DO YOU REFER TO OR DO YOU DETERMINE THE GENERAL EFFECTS OF DOPING ON CURRENT FLOW  
6 364 61-11 DO YOU USE OR REFER TO MEASUREMENTS OF FORWARD BIAS RESISTANCE  
6 365 61-12 DO YOU USE OR REFER TO DIODE COLOR CODING  
6 366 61-13 DO YOU USE OR REFER TO CENTRIFUGAL FORCE OF AN ELECTRON IN ORBIT AROUND A NUCLEUS  
6 367 61-14 DO YOU USE OR REFER TO CENTRIPITAL FORCE OF AN ELECTRON IN ORBIT AROUND A NUCLEUS  
6 368 61-15 DO YOU USE OR REFER TO DIODE NUMBERING SYSTEM, SUCH AS IN 538  
6 369 61-16 DO YOU USE OR REFER TO KINETIC ENERGY OF AN ELECTRON MOVING IN ORBIT  
6 370 61-17 DO YOU USE OR REFER TO POTENTIAL ENERGY OF AN ELECTRON MOVING IN ORBIT  
6 371 61-18 DO YOU USE OR REFER TO MEASUREMENTS OF REVERSE BIAS RESISTANCE  
6 372 61-19 DO YOU USE OR REFER TO NUMBER OF ELECTRONS IN A PARTICULAR SHELL OR ORBIT  
6 373 61-20 DO YOU USE OR REFER TO PERMISSIBLE ENERGY LEVELS OF AN ORBITING ELECTRON  
6 374 61-21 DO YOU USE OR REFER TO FORBIDDEN ENERGY LEVELS OF AN ORBITING ELECTRON  
6 375 61-22 DO YOU USE OR REFER TO VALENCE ELECTRONS (THOSE IN THE OUTERMOST SHELL)  
6 376 61-23 DO YOU USE OR REFER TO ATOMIC NUMBER (TOTAL NUMBER OF ELECTRONS IN ATOM)  
6 377 61-24 DO YOU USE OR REFER TO SYMBOLS ON THE DIODE WHICH INDICATE THE CATHODE END  
6 378 61-25 DO YOU NEED TO KNOW WHICH MATERIALS ARE USED IN THE CONSTRUCTION OF DIODES SUCH AS GERMANIUM OR SILICON  
6 379 61-26 DO YOU NEED TO KNOW THAT SEMICONDUCTORS HAVE NEGATIVE TEMPERATURE COEFFICIENTS OF RESISTANCE (AS TEMPERATURE INCREASES RESISTANCE DECREASES)  
6 380 61-27 DO YOU USE OR REFER TO PN JUNCTION DIODE CHARACTERISTIC CURVES, SUCH AS VOLTAGE - CURRENT  
6 381 61-28 DO YOU DETERMINE WHETHER PN JUNCTION DIODES ARE FORWARD BIASED OR REVERSE BIASED WHEN YOU READ OR INTERPRET CIRCUIT DIAGRAMS  
6 382 61-29 DO YOU USE OR REFER TO VALENCE BAND IN SEMICONDUCTOR MATERIALS



PCT MBRS RESPONDING 'YES' BY SELECTED GRPS

TASK GROUP SUMMARY  
PERCENT MEMBERS PERFORMING

DY-TSK

SPC SPC SPC  
151 152 154

6 383 61-30 DO YOU USE OR REFER TO FORBIDDEN BAND IN SEMICONDUCTOR MATERIALS	7	7	8
6 384 61-31 DO YOU USE OR REFER TO CONDUCTION BAND IN SEMICONDUCTOR MATERIALS	7	7	8
6 385 61-32 DO YOU USE OR REFER TO COVALENT BONDING IN SEMICONDUCTOR MATERIALS	7	7	8
6 386 61-33 DO YOU USE OR REFER TO ELECTRON-HOLE PAIR CREATED IN SEMICONDUCTORS	0	0	0
6 387 61-34 DO YOU USE OR REFER TO ELECTRON FLOW OR HOLE FLOW IN SEMICONDUCTORS	21	21	23
6 388 61-35 DO YOU USE OR REFER TO DONOR IMPURITY IN SEMICONDUCTORS	7	7	8
6 389 61-36 DO YOU USE OR REFER TO ACCEPTOR IMPURITY IN SEMICONDUCTORS	7	7	8
6 390 61-37 DO YOU USE OR REFER TO P-TYPE SEMICONDUCTOR MATERIAL	57	57	54
6 391 61-38 DO YOU USE OR REFER TO N-TYPE SEMICONDUCTOR MATERIAL	57	57	54
6 392 61-39 DO YOU USE OR REFER TO MAJORITY CARRIERS IN SEMICONDUCTORS	7	7	8
6 393 61-40 DO YOU USE OR REFER TO MINORITY CARRIERS IN SEMICONDUCTORS	7	7	8
6 394 61-41 DO YOU USE OR REFER TO JUNCTION RECOMBINATION IN SEMICONDUCTORS	7	7	8
6 395 61-42 DO YOU USE OR REFER TO DEPLETION REGION IN SEMICONDUCTORS	7	7	8
6 396 61-43 DO YOU USE OR REFER TO RELATIONSHIP BETWEEN BARRIER WIDTH AND DIFFERENCE OF POTENTIAL	7	7	8
6 397 61-44 DO YOU USE OR REFER TO THE 10:1 BACK TO FRONT RESISTANCE RATIO FOR DIODES	71	71	69
6 398 61-45 DO YOU USE OR REFER TO BARRIER HEIGHT IN SEMICONDUCTORS	14	14	15
6 399 61-46 DO YOU USE OR REFER TO DIODE SUBSTITUTION INFORMATION	64	64	62
6 400 61-47 DO YOU USE OR REFER TO MAXIMUM AVERAGE FORWARD CURRENT DIODE RATINGS	29	29	23
6 401 61-48 DO YOU USE OR REFER TO PEAK RECURRENT FORWARD CURRENT DIODE RATINGS	21	21	15
6 402 61-49 DO YOU USE OR REFER TO MAXIMUM SURGE CURRENT DIODE RATINGS	21	21	15
6 403 61-50 DO YOU USE OR REFER TO PEAK REVERSE (INVERSE) VOLTAGE DIODE RATINGS	36	36	31
6 404 62-01 DO YOU WORK WITH TRANSISTORS IN YOUR PRESENT JOB.	86	86	85
6 405 62-02 DO YOU INSPECT TRANSISTORS	86	86	85
6 406 62-03 DO YOU REMOVE OR REPLACE TRANSISTORS	79	79	77
6 407 62-04 DO YOU CHECK TRANSISTORS USING AN INSTRUMENT	79	79	77
6 408 62-05 DO YOU USE OR REFER TO EMITTER - BASE (EB) FORWARD AND REVERSE RESISTANCE MEASUREMENTS	71	71	69
6 409 62-06 DO YOU USE OR REFER TO COLLECTOR - BASE (CB) FORWARD AND REVERSE RESISTANCE MEASUREMENTS	64	64	62

TRANSISTORS



PCT MBMS RESPONDING "YES" BY SELECTED GPS

TASK GROUP SUMMARY  
PERCENT MEMBERS PERFORMING

	SPC	SPC	SPC
	151	152	154
G 410 G2-07 DO YOU USE OR REFER TO EMITTER - COLLECTOR (EC)	64	64	62
RESISTANCE MEASUREMENTS			
G 411 G2-08 DO YOU USE OR REFER TO HOW BIASING AFFECTS THE	14	14	15
PHYSICAL BARRIER WIDTH OF THE EMITTER - BASE JUNCTION			
G 412 G2-09 DO YOU USE OR REFER TO HOW BIASING AFFECTS THE	14	14	15
PHYSICAL BARRIER WIDTH OF THE COLLECTOR - BASE JUNCTION			
G 413 G2-10 DO YOU USE OR REFER TO THE PHYSICAL SIZE OF THE	43	43	38
TRANSISTOR STRUCTURE (COLLECTOR, BASE AND EMITTER)			
G 414 G2-11 DO YOU USE OR REFER TO LEAKAGE CURRENT (ICBO) IN A	14	14	15
TRANSISTOR			
G 415 G2-12 DO YOU USE OR REFER TO TRANSISTOR SCHEMATIC SYMBOLS	84	84	85
G 416 G2-13 DO YOU USE OR REFER TO TRANSISTOR NOTATION SUCH AS	84	84	85
Q1, Q2, Q3, ETC			
G 417 G2-14 DO YOU USE OR REFER TO TRANSISTOR SUBSTITUTION	57	57	54
INFORMATION			
G 418 G2-15 DO YOU USE OR REFER TO THE GENERAL RULE THAT THE	29	29	23
TRANSISTOR BASE CURRENT IS NORMALLY SIGNIFICANTLY			
SMALLER THAN THE EMITTER CURRENT IE (USUALLY IB BEING 2 TO			
8 PERCENT OF IE)			
G 419 G2-16 DO YOU USE THE INFORMATION THAT THE EFFECT OF EMITTER	36	36	31
BASE VOLTAGE ON BASE CURRENT IS THE CONTROLLING FACTOR FOR			
TRANSISTORS			
G 420 G2-17 DO YOU USE THE GENERAL RULE THAT LEAKAGE CURRENT	29	29	23
(ICBO) IN A TRANSISTOR INCREASES AS TEMPERATURE INCREASES			
G 421 G2-18 DO YOU USE OR REFER TO TRANSISTOR CHARACTERISTIC	14	14	15
CURVES			
G 422 G2-19 DO YOU USE OR REFER TO BETA TRANSISTOR GAINS	7	7	8
G 423 G2-20 DO YOU USE OR REFER TO ALPHA TRANSISTOR GAINS	7	7	8
G 424 G2-21 DO YOU USE OR REFER TO GAMMA TRANSISTOR GAINS	7	7	8
G 425 G2-22 DO YOU CALCULATE BETA TRANSISTOR GAINS	7	7	8
G 426 G2-23 DO YOU CALCULATE ALPHA TRANSISTOR GAINS	7	7	8
G 427 G2-24 DO YOU CALCULATE GAMMA TRANSISTOR GAINS	7	7	8
G 428 G3-01 DO YOU WORK WITH TRANSISTOR AMPLIFIERS IN YOUR	71	71	69
PRESENT JOB			
G 429 G3-02 DO YOU INSPECT TRANSISTOR AMPLIFIERS	64	64	62
G 430 G3-03 DO YOU ALIGN OR ADJUST TRANSISTOR AMPLIFIERS	64	64	62
G 431 G3-04 DO YOU TROUBLESHOOT TO THE AMPLIFIER CIRCUIT LEVEL	57	57	54
G 432 G3-05 DO YOU TROUBLESHOOT TO AMPLIFIER COMPONENTS	50	50	46
G 433 G3-06 DO YOU REMOVE OR REPLACE THE COMPLETE AMPLIFIER	71	71	69
G 434 G3-07 DO YOU REMOVE OR REPLACE AMPLIFIER COMPONENTS	57	57	54
G 435 G3-08 DO YOU USE OR REFER TO (COMMON EMITTER) THE CHANGE IN	21	21	23
COLLECTOR CURRENT WHICH RESULTS FROM A CHANGE IN BASE			
CURRENT			
G 436 G3-09 DO YOU USE OR REFER TO (COMMON EMITTER) THE	14	14	15
CALCULATIONS NECESSARY TO MEASURE THE SPECIFIC CHANGE IN			
COLLECTOR CURRENT WHICH RESULTS FROM A SPECIFIC CHANGE IN			
BASE CURRENT			

TRANSISTOR  
AMPLIFIERS

PCT MEMS RESPONDING 'YES' BY SELECTED GRPS

GPSUMB PAGE 17

TASK GROUP SUMMARY  
PERCENT MEMBERS PERFORMING

0Y-TSK

	SPC	SPC	SPC
	151	152	154
G 437 G3-10 DO YOU USE OR REFER TO (COMMON EMITTER) THE CHANGE IN COLLECTOR VOLTAGE WHICH RESULTS FROM A CHANGE IN BASE CURRENT	21	21	23
G 438 G3-11 DO YOU USE OR REFER TO (COMMON EMITTER) THE CALCULATIONS NECESSARY TO MEASURE THE SPECIFIC CHANGE IN COLLECTOR VOLTAGE WHICH RESULTS FROM A SPECIFIC CHANGE IN BASE CURRENT	7	7	8
G 439 G3-12 DO YOU USE OR REFER TO (COMMON EMITTER) THE CHANGE IN BASE CURRENT WHICH RESULTS FROM AN INPUT SIGNAL	14	14	15
G 440 G3-13 DO YOU USE OR REFER TO (COMMON EMITTER) THE CALCULATIONS NECESSARY TO MEASURE THE SPECIFIC CHANGE IN BASE CURRENT WHICH RESULTS FROM A SPECIFIC INPUT SIGNAL	7	7	8
G 441 G3-14 DO YOU USE THE LOAD-LINE METHOD OF ANALYSIS IN YOUR CIRCUIT ANALYSIS (THIS METHOD REQUIRES YOU TO PLOT A LOAD-LINE ON A TRANSISTOR CHARACTERISTIC CURVE)	7	7	8
G 442 G3-15 DO YOU USE OR REFER TO THE OPERATING POINT Q (QUIESCENT POINT) FOR A TRANSISTOR	14	14	15
G 443 G3-16 DO YOU CALCULATE THE SPECIFIC QUIESCENT POINT FOR A PARTICULAR TRANSISTOR	7	7	8
G 444 G3-17 DO YOU MEASURE VOLTAGE GAIN USED IN THE COMMON EMITTER CONFIGURATION	29	29	31
G 445 G3-18 DO YOU MEASURE CURRENT GAIN USED IN THE COMMON EMITTER CONFIGURATION	21	21	23
G 446 G3-19 DO YOU MEASURE POWER GAIN USED IN THE COMMON EMITTER CONFIGURATION	29	29	31
G 447 G3-20 DO YOU CALCULATE THE VOLTAGE GAIN FOR SPECIFIC TRANSISTORS USING A FORMULA THAT IS, DO YOU DIVIDE THE VOLTAGE IN BASE-EMITTER VOLTAGE INTO THE CHANGE THE BASE COLLECTOR VOLTAGE TO DETERMINE THE VOLTAGE GAIN	0	0	0
G 448 G3-21 DO YOU CALCULATE THE CURRENT GAIN FOR SPECIFIC TRANSISTORS USING A FORMULA THAT IS, DO YOU DIVIDE THE CHANGE IN BASE CURRENT INTO THE CHANGE IN COLLECTOR CURRENT TO DETERMINE THE CURRENT GAIN	0	0	0
G 449 G3-22 DO YOU CALCULATE THE POWER GAIN FOR A SPECIFIC TRANSISTOR USING A FORMULA THAT IS, DO YOU MULTIPLY THE CURRENT GAIN TIMES THE VOLTAGE GAIN TO DETERMINE THE POWER GAIN	0	0	0
G 450 G3-23 DO YOU NEED TO KNOW THAT MORE COLLECTOR CURRENT IS GENERATED WITH LESS COLLECTOR VOLTAGE AS TEMPERATURE INCREASES (THIS AFFECTS THE STATIC OPERATING POINT Q3 OF THE TRANSISTOR)	21	21	23
G 451 G3-24 DO YOU COMPUTE THE STATIC OPERATING POINT Q3 OF A TRANSISTOR AT DIFFERENT TEMPERATURES	14	14	15
G 452 G3-25 DO YOU IDENTIFY ON SCHEMATIC DIAGRAMS AND RELATE TO THE ACTUAL CIRCUITRY THE COMPONENTS ASSOCIATED WITH EMITTER (SWAMPING) RESISTOR STABILIZATION	36	36	31
G 453 G3-26 DO YOU IDENTIFY ON SCHEMATIC DIAGRAMS AND RELATE TO THE ACTUAL CIRCUITRY THE COMPONENTS ASSOCIATED WITH SELF-BIAS STABILIZATION	29	29	23

PCT MARS RESPONDING "YES" BY SELECTED GRPS

GPSUM8 PAGE 18

TASK GROUP SUMMARY  
PERCENT MEMBERS PERFORMING

UY-TSK

SPC	SPC	SPC	SPC
151	152	154	
29	29	23	
29	29	23	
29	29	23	
29	29	23	
29	29	23	
29	29	23	
43	43	38	
36	36	31	
36	36	31	
36	36	31	
36	36	31	
36	36	38	
43	43	38	
29	29	23	
21	21	15	
14	14	15	
21	21	23	
7	7	8	
14	14	8	
29	29	23	
57	57	54	
14	14	15	
29	29	23	

6 454 63-27 DO YOU IDENTIFY ON SCHEMATIC DIAGRAMS AND RELATE TO THE ACTUAL CIRCUITRY THE COMPONENTS ASSOCIATED WITH THERMISTOR STABILIZATION

6 455 63-28 DO YOU IDENTIFY ON SCHEMATIC DIAGRAMS AND RELATE TO THE ACTUAL CIRCUITRY THE COMPONENTS ASSOCIATED WITH FORWARD BIAS DIODE STABILIZATION

6 456 63-29 DO YOU IDENTIFY ON SCHEMATIC DIAGRAMS AND RELATE TO THE ACTUAL CIRCUITRY THE COMPONENTS ASSOCIATED WITH REVERSE BIAS DIODE STABILIZATION

6 457 63-30 DO YOU IDENTIFY ON SCHEMATIC DIAGRAMS AND RELATE TO THE ACTUAL CIRCUITRY THE COMPONENTS ASSOCIATED WITH DOUBLE DIODE STABILIZATION

6 458 63-31 DO YOU TROUBLESHOOT CIRCUITS WHICH HAVE COMPONENTS WHICH PERFORM EMITTER (SWAMPING) RESISTOR STABILIZATION

6 459 63-32 DO YOU TROUBLESHOOT CIRCUITS WHICH HAVE COMPONENTS WHICH PERFORM SELF-BIAS STABILIZATION

6 460 63-33 DO YOU TROUBLESHOOT CIRCUITS WHICH HAVE COMPONENTS WHICH PERFORM THERMISTOR STABILIZATION

6 461 63-34 DO YOU TROUBLESHOOT CIRCUITS WHICH HAVE COMPONENTS WHICH PERFORM FORWARD BIAS DIODE STABILIZATION

6 462 63-35 DO YOU TROUBLESHOOT CIRCUITS WHICH HAVE COMPONENTS WHICH PERFORM REVERSE BIAS DIODE STABILIZATION

6 463 63-36 DO YOU TROUBLESHOOT CIRCUITS WHICH HAVE COMPONENTS WHICH PERFORM DOUBLE DIODE STABILIZATION

6 464 63-37 DO YOU IDENTIFY AMPLITUDE DISTORTION FOR TRANSISTOR CIRCUITS

6 465 63-38 DO YOU TROUBLESHOOT TRANSISTOR CIRCUITS TO FIND THE CAUSES OF AMPLITUDE DISTORTION

6 466 63-39 DO YOU IDENTIFY FREQUENCY DISTORTION FOR TRANSISTOR CIRCUITS

6 467 63-40 DO YOU IDENTIFY PHASE DISTORTION FOR TRANSISTOR CIRCUITS

6 468 63-41 DO YOU TROUBLESHOOT TRANSISTOR CIRCUITS TO FIND THE CAUSES OF PHASE DISTORTION

6 469 63-42 DO YOU TROUBLESHOOT TRANSISTOR CIRCUITS TO FIND THE CAUSES OF FREQUENCY DISTORTION

6 470 63-43 DO YOU NEED TO KNOW THE DEGENERATIVE EFFECTS ON THE CIRCUIT CAUSED BY CHANGING EMITTER RESISTANCE FOR TRANSISTOR AMPLIFIERS IN THE COMMON COLLECTOR CONFIGURATION

6 471 63-44 DO YOU DETERMINE THE CLASS OF OPERATION FOR AMPLIFIERS IN ORDER TO TROUBLESHOOT AMPLIFIER CIRCUITS

6 472 63-45 DO YOU TROUBLESHOOT OR REPAIR PARAPHASE AMPLIFIERS

6 473 63-46 DO YOU TROUBLESHOOT OR REPAIR PUSH-PULL AMPLIFIERS

6 474 63-47 DO YOU TROUBLESHOOT OR REPAIR COMPLEMENTARY SYMMETRY CIRCUITS

6 475 63-48 DO YOU TROUBLESHOOT OR REPAIR COMPOUND-CONNECTED AMPLIFIERS

PCT MRS RESPONDING 'YES' BY SELECTED GRPS

TASK GROUP SUMMARY  
PERCENT MEMBERS PERFORMING

DY-TSK

		SPC	SPC	SPC
		151	152	154
476	43-49 DO YOU TROUBLESHOOT OR REPAIR CASCADE-CONNECTED AMPLIFIERS	43	43	38
477	41-01 DO YOU USE OR REFER TO VARACTORS	64	64	62
478	41-02 DO YOU USE OR REFER TO TUNNEL DIODES	21	21	15
479	41-03 DO YOU USE OR REFER TO FIELD EFFECT TRANSISTORS (FET)	50	50	46
480	41-04 DO YOU USE OR REFER TO UNIJUNCTION TRANSISTORS	43	43	38
481	41-05 DO YOU USE OR REFER TO ZENER DIODES	93	93	92
482	41-06 DO YOU USE OR REFER TO INTEGRATED CIRCUITS	93	93	92
483	42-01 IN YOUR PRESENT JOB, DO YOU WORK WITH POWER SUPPLIES	93	93	92
484	42-02 DO YOU INSPECT POWER SUPPLIES	93	93	92
485	42-03 DO YOU CLEAN POWER SUPPLIES	86	86	85
486	42-04 DO YOU ALIGN OR ADJUST POWER SUPPLIES	93	93	92
487	42-05 DO YOU TROUBLESHOOT TO POWER SUPPLY CIRCUIT LEVEL	93	93	92
488	42-06 DO YOU TROUBLESHOOT TO POWER SUPPLY COMPONENTS	86	86	85
489	42-07 DO YOU REMOVE OR REPLACE COMPLETE POWER SUPPLIES	86	86	85
490	42-08 DO YOU REMOVE OR REPLACE POWER SUPPLY COMPONENTS	86	86	85
491	42-09 DO YOU WORK WITH HALF-WAVE RECTIFIERS	64	64	62
492	42-10 DO YOU WORK WITH FULL-WAVE RECTIFIERS OTHER THAN BRIDGE RECTIFIERS	71	71	69
493	42-11 DO YOU WORK WITH BRIDGE RECTIFIERS	71	71	69
494	42-12 DO YOU WORK WITH THREE-PHASE RECTIFIERS	71	71	69
495	42-13 DO YOU USE OR REFER TO INPUT VOLTAGE	86	86	85
496	42-14 DO YOU USE OR REFER TO INPUT FREQUENCY	71	71	77
497	42-15 DO YOU USE OR REFER TO PEAK OUTPUT VOLTAGE	79	79	77
498	42-16 DO YOU USE OR REFER TO AVERAGE OUTPUT VOLTAGE	79	79	77
499	42-17 DO YOU USE OR REFER TO RIPPLE AMPLITUDE	86	86	85
500	42-18 DO YOU USE OR REFER TO RIPPLE FREQUENCY	29	29	31
501	42-19 DO YOU USE OR REFER TO PEAK REVERSE (INVERSE) VOLTAGE	36	36	31
502	42-20 DO YOU USE OR REFER TO SHAPE OF OUTPUT WAVEFORMS	86	86	85
503	42-21 DO YOU USE OR REFER TO EFFECTIVE OUTPUT VOLTAGE	71	71	69
504	42-22 DO YOU WORK WITH CIRCUITS WHICH EMPLOY CAPACITIVE FILTERS	93	93	92
505	42-23 DO YOU WORK WITH CIRCUITS WHICH EMPLOY INDUCTIVE FILTERS	79	79	77
506	42-24 DO YOU WORK WITH CIRCUITS WHICH EMPLOY CAPACITIVE INPUT L-TYPE FILTERS	71	71	69
507	42-25 DO YOU WORK WITH CIRCUITS WHICH EMPLOY INDUCTIVE INPUT L-TYPE FILTERS	57	57	54
508	42-26 DO YOU WORK WITH CIRCUITS WHICH EMPLOY LC PI-TYPE FILTERS	50	50	46
509	42-27 DO YOU WORK WITH CIRCUITS WHICH EMPLOY RC PI-TYPE FILTERS	57	57	54
510	42-28 DO YOU WORK WITH CIRCUITS WHICH EMPLOY DON'T REMEMBER WHICH TYPE OF FILTER	29	29	31
511	42-29 DO YOU HAVE THE OPTION OF REPLACING ONE TYPE OF FILTER WITH A DIFFERENT TYPE FILTER	21	21	23
512	43-01 DO YOU WORK WITH OSCILLATORS IN YOUR PRESENT JOB	57	57	54

SOLID-STATE  
SPECIAL PURPOSE  
DEVICES

POWER SUPPLIES

OSCILLATORS



PCT MBRS RESPONDING 'YES' BY SELECTED GRPS

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TASK GROUP SUMMARY  
PERCENT MEMBERS PERFORMING

		SPC		SPC		SPC	
		151		152		154	
OY-TSK							
H 513 H3-02 DO YOU INSPECT OSCILLATORS				57		54	
H 514 H3-03 DO YOU ALIGN OR ADJUST OSCILLATORS				57		54	
H 515 H3-04 DO YOU REMOVE OR REPLACE COMPLETE OSCILLATORS				57		54	
H 516 H3-05 DO YOU REMOVE OR REPLACE OSCILLATOR COMPONENTS				50		50	
H 517 H3-06 DO YOU TROUBLESHOOT TO OSCILLATOR CIRCUIT LEVEL				57		54	
H 518 H3-07 DO YOU TROUBLESHOOT TO OSCILLATOR COMPONENTS				50		50	
H 519 H3-08 DO YOU USE OR REFER TO FEEDBACK				57		54	
H 520 H3-09 DO YOU USE OR REFER TO FREQUENCY DETERMINING DEVICES				50		50	
(FDD)							
H 521 H3-10 DO YOU USE OR REFER TO AMPLITUDE STABILITY				43		46	
H 522 H3-11 DO YOU USE OR REFER TO FREQUENCY STABILITY				43		46	
H 523 H3-12 DO YOU USE OR REFER TO DAMPING				43		38	
H 524 H3-13 DO YOU USE OR REFER TO REGENERATIVE FEEDBACK				50		46	
H 525 H3-14 DO YOU USE OR REFER TO PIEZOELECTRIC EFFECT				29		31	
H 526 H3-15 DO YOU USE OR REFER TO CRITICAL DAMPING				36		38	
H 527 H3-16 DO YOU USE OR REFER TO UNDER DAMPING				29		31	
H 528 H3-17 DO YOU USE OR REFER TO OVER DAMPING				36		38	
H 529 H3-18 DO YOU WORK WITH OSCILLATORS WHICH USE LC TANK				50		46	
CIRCUITS AS FDD							
H 530 H3-19 DO YOU WORK WITH OSCILLATORS WHICH USE MC NETWORKS AS				50		46	
FDD							
H 531 H3-20 DO YOU WORK WITH OSCILLATORS WHICH USE CRYSTALS AS				57		54	
FDD							
H 532 H3-21 DO YOU WORK WITH OSCILLATORS WHICH USE DON'T REMEMBER				14		15	
WHICH TYPE OF FDD							
H 533 H3-22 DO YOU WORK WITH SERIES HARTLEY SINUSOIDAL				29		23	
OSCILLATORS							
H 534 H3-23 DO YOU WORK WITH SHUNT HARTLEY SINUSOIDAL OSCILLATORS				29		23	
H 535 H3-24 DO YOU WORK WITH COLPITTS SINUSOIDAL OSCILLATORS				21		15	
H 536 H3-25 DO YOU WORK WITH CLAPP SINUSOIDAL OSCILLATORS				21		15	
H 537 H3-26 DO YOU WORK WITH BUTLER SINUSOIDAL OSCILLATORS				21		15	
H 538 H3-27 DO YOU WORK WITH DON'T REMEMBER WHICH TYPE OF				50		46	
OSCILLATORS							
I 539 I1-01 DO YOU WORK WITH MULTIVIBRATORS IN YOUR PRESENT JOB				50		46	
I 540 I1-02 DO YOU INSPECT WAVE GENERATING OR SHAPING CIRCUITS				43		38	
I 541 I1-03 DO YOU ALIGN OR ADJUST WAVE GENERATING OR SHAPING				43		38	
CIRCUITS							
I 542 I1-04 DO YOU CALIBRATE WAVE GENERATING OR SHAPING CIRCUITS				29		31	
I 543 I1-05 DO YOU TROUBLESHOOT TO WAVE GENERATING OR SHAPING				43		38	
CIRCUITS							
I 544 I1-06 DO YOU TROUBLESHOOT TO WAVE GENERATING OR SHAPING				29		23	
CIRCUIT COMPONENTS							
I 545 I1-07 DO YOU REMOVE OR REPLACE COMPLETE WAVE GENERATING OR				43		38	
SHAPING CIRCUITS							
I 546 I1-08 DO YOU REMOVE OR REPLACE WAVE GENERATING OR SHAPING				29		23	
COMPONENTS							
I 547 I1-09 DO YOU WORK WITH MULTIVIBRATORS WHICH CONTAIN LC TANK				36		31	
CIRCUITS							

MULTIVIBRATORS

PCT MBRS RESPONDING 'YES' BY SELECTED GRPS

TASK GROUP SUMMARY  
PERCENT MEMBERS PERFORMING

DY-TSK					
		SPC	SPC	SPC	
		151	152	154	
1 548	11-10 DO YOU WORK WITH MULTIVIBRATORS WHICH CONTAIN RC NETWORKS	36	36	31	
1 549	11-11 DO YOU WORK WITH MULTIVIBRATORS WHICH CONTAIN CRYSTALS	43	43	38	
1 550	11-12 DO YOU WORK WITH MULTIVIBRATORS WHICH CONTAIN DON'T REMEMBER WHICH TYPE OF FDD	29	29	31	
1 551	11-13 DO YOU WORK WITH ASTABLE MULTIVIBRATORS	29	29	31	
1 552	11-14 DO YOU WORK WITH MONOSTABLE MULTIVIBRATORS	29	29	31	
1 553	11-15 DO YOU WORK WITH BISTABLE MULTIVIBRATORS	29	29	31	
1 554	11-16 DO YOU WORK WITH DON'T REMEMBER WHICH TYPE MULTIVIBRATORS	36	36	31	
1 555	12-01 DO YOU WORK WITH LIMITERS OR CLAMPERS IN YOUR PRESENT JOB	57	57	54	LIMITERS AND CLAMPERS
1 556	12-02 DO YOU WORK WITH SERIES DIODE LIMITERS	50	50	46	
1 557	12-03 DO YOU WORK WITH SHUNT DIODE LIMITERS	43	43	38	
1 558	12-04 DO YOU WORK WITH LIMITERS WITH BIAS	29	29	23	
1 559	12-05 DO YOU WORK WITH ZENER DIODE LIMITERS	43	43	38	
1 560	12-06 DO YOU WORK WITH TRANSISTOR LIMITERS	36	36	31	
1 561	12-07 DO YOU WORK WITH DON'T KNOW WHICH TYPE OF LIMITERS	21	21	23	
1 562	12-08 DO YOU WORK WITH BASIC DIODE CLAMPING CIRCUITS	43	43	38	
1 563	12-09 DO YOU WORK WITH DIODE CLAMPING CIRCUITS WITH BIAS	36	36	31	
1 564	12-10 DO YOU WORK WITH DON'T KNOW WHICH TYPE OF CLAMPING CIRCUIT	29	29	31	
1 565	13-01 IN YOUR PRESENT JOB, DO YOU WORK ON EQUIPMENT WHICH CONTAINS ELECTRON TUBES	93	93	92	ELECTRON TUBES
1 566	13-02 DO YOU CHECK ELECTRON TUBES TO SEE IF THEY ARE GOOD	79	79	77	
1 567	13-03 DO YOU USE TUBE TESTERS TO CHECK ELECTRON TUBES	71	71	69	
1 568	13-04 DO YOU USE MULTIMETERS TO CHECK ELECTRON TUBES	64	64	62	
1 569	13-05 DO YOU USE SCOPES TO CHECK ELECTRON TUBES	71	71	69	
1 570	13-06 DO YOU USE SUBSTITUTION TO CHECK ELECTRON TUBES	93	93	92	
1 571	13-07 DO YOU USE OR REFER TO CUTOFF	64	64	62	
1 572	13-08 DO YOU USE OR REFER TO PEAK INVERSE VOLTAGE RATING	36	36	31	
1 573	13-09 DO YOU USE OR REFER TO PEAK CURRENT RATING	36	36	31	
1 574	13-10 DO YOU USE OR REFER TO TRANSIT TIME	21	21	23	
1 575	13-11 DO YOU USE OR REFER TO PLATE DISSIPATION RATING	21	21	23	
1 576	13-12 DO YOU USE OR REFER TO SATURATION	57	57	54	
1 577	13-13 DO YOU USE OR REFER TO DC PLATE RESISTANCE	36	36	31	
1 578	13-14 DO YOU COMPUTE ACTUAL VALUES OF THE DC PLATE RESISTANCE FOR ELECTRON TUBES	21	21	23	
1 579	13-15 DO YOU USE OR REFER TO PLATE VOLTAGE	93	93	92	
1 580	13-16 DO YOU USE OR REFER TO PLATE CURRENT	79	79	77	
1 581	13-17 DO YOU USE OR REFER TO GRID VOLTAGE	86	86	85	
1 582	13-18 DO YOU USE OR REFER TO GRID CURRENT	64	64	62	
1 583	13-19 DO YOU USE OR REFER TO CATHODE VOLTAGE	93	93	92	
1 584	13-20 DO YOU USE OR REFER TO CATHODE CURRENT	79	79	77	
1 585	13-21 DO YOU USE OR REFER TO THE TRIODE AMPLIFICATION FACTOR (THE AMPLIFICATION FACTOR FOR TRIODES IS DEFINED AS THE RATIO OF CHANGE IN PLATE VOLTAGE TO A CHANGE IN GRID VOLTAGE)	29	29	31	

# PCT MBRS RESPONDING 'YES' BY SELECTED GRPS

GPSMR PAGE 22

TASK GROUP SUMMARY  
PERCENT MEMBERS PERFORMING

SPC SPC SPC  
151 152 154

DT-TSK

1 586 13-22 DO YOU CALCULATE ACTUAL VALUES OF TRIODE  
AMPLIFICATION FACTORS 7 7 8  
1 587 13-23 DO YOU USE OR REFER TO MULTIGRID ITEMODE, PENTODE,  
ETC) AMPLIFICATION FACTORS 21 21 23  
1 588 13-24 DO YOU USE OR REFER TO ELECTRON TUBE TRANSCONDUCTANCE  
(G) WHICH IS MEASURED IN MMOS) 7 7 8  
1 589 13-25 DO YOU CALCULATE ACTUAL VALUES OF ELECTRON TUBE  
TRANSCONDUCTANCES 7 7 8  
1 590 13-26 DO YOU USE OR REFER TO THE ELECTRON TUBE PARAMETER  
CALLED AC PLATE RESISTANCE 7 7 8  
1 591 13-27 DO YOU CALCULATE ACTUAL VALUES OF AC PLATE  
RESISTANCE 7 7 8  
1 592 13-28 DO YOU USE OR REFER TO ELECTRON TUBE INTERELECTRODE  
CAPACITANCE 43 43 38  
1 593 13-29 DO YOU USE OR REFER TO CHARACTERISTIC CURVES IN YOUR  
WORK WITH ELECTRON TUBES 7 7 8  
1 594 13-30 DO YOU USE CHARACTERISTIC CURVES TO SELECT PLATE  
VOLTAGE FOR A SPECIFIED BIAS 14 14 15  
1 595 13-31 DO YOU USE CHARACTERISTIC CURVES TO SELECT PLATE  
CURRENT FOR A SPECIFIED BIAS 14 14 15  
1 596 13-32 DO YOU USE CHARACTERISTIC CURVES TO SELECT BIAS  
REQUIRED FOR CUTOFF 29 29 31  
1 597 13-33 DO YOU USE CHARACTERISTIC CURVES TO SELECT BIAS  
REQUIRED FOR SATURATION 21 21 23  
1 598 13-34 DO YOU USE OR REFER TO ELECTRON TUBE AMPLIFIER GAIN 79 79 77  
1 599 13-35 DO YOU USE OR REFER TO ELECTRON TUBE AMPLIFIER  
EFFICIENCY 43 43 46  
1 600 13-36 DO YOU USE TEST TUBE CHECKERS TO DETERMINE ELECTRON  
TUBE AMPLIFIER GAIN 50 50 46  
1 601 13-37 DO YOU USE MULTIMETERS TO DETERMINE ELECTRON TUBE  
AMPLIFIER GAIN 64 64 62  
1 602 13-38 DO YOU USE OSCILLOSCOPES TO DETERMINE ELECTRON TUBE  
AMPLIFIER GAIN 79 79 77  
1 603 13-39 DO YOU USE CHARACTERISTIC CURVES TO DETERMINE  
ELECTRON TUBE AMPLIFIER GAIN 7 7 8  
1 604 13-40 DO YOU CALCULATE ANY ELECTRON TUBE CAPACITANCES SUCH  
AS INPUT CAPACITANCE 14 14 15  
1 605 13-41 DO YOU USE OR REFER TO TUBE SOCKET NOTATION 79 79 77  
1 606 13-42 DO YOU USE OR REFER TO PIN NUMBERING SYSTEMS 86 86 85  
1 607 13-43 DO YOU USE OR REFER TO THE TYPE OF MATERIAL OR THE  
OPERATING TEMPERATURE OF THE EMITTING SURFACE IN THE  
ELECTRON TUBES YOU WORK ON 7 7 8  
1 608 13-44 DO YOU USE OR REFER TO TUBE SUBSTITUTION MATERIAL  
SUCH AS MANUALS OR CHARTS 71 71 69

J 609 JT-01 DO YOU WORK WITH ELECTRON TUBE AMPLIFIERS OR CIRCUITS 79 79 77  
IN YOUR PRESENT JOB  
J 610 JT-02 DO YOU DETERMINE THE CLASS OF OPERATION FOR ELECTRON  
TUBE AMPLIFIERS IN ORDER TO TROUBLESHOOT AMPLIFIER  
CIRCUITS 21 21 15

ELECTRON TUBE  
AMPLIFIERS  
AND CIRCUITS

PCT MBRS RESPONDING 'YES' BY SELECTED GRPS

TASK GROUP SUMMARY  
PERCENT MEMBERS PERFORMING

DYESK		SPC	SPC	SPC
		151	152	154
J 611	J1-03 DO YOU TROUBLESHOOT OR REPAIR PARAPHASE AMPLIFIERS	29	29	31
J 612	J1-04 DO YOU TROUBLESHOOT OR REPAIR PUSH-PULL AMPLIFIERS	64	64	62
J 613	J1-05 DO YOU TROUBLESHOOT OR REPAIR COMPOUND-CONNECTED AMPLIFIERS	36	36	31
J 614	J1-04 DO YOU TROUBLESHOOT OR REPAIR CASCADE-CONNECTED AMPLIFIERS	36	36	31
J 615	J1-07 DO YOU TROUBLESHOOT OR REPAIR DON'T KNOW WHICH TYPE OF AMPLIFIER	50	50	54
J 616	J2-01 DO YOU WORK WITH GAS TUBES (HOT CATHODE OR COLD CATHODE)	86	86	85
J 617	J2-02 DO YOU WORK WITH CATHODE-RAY TUBES	86	86	92
J 618	J2-03 DO YOU USE OR REFER TO THE CHARACTERISTICS OF BEAM POWER TUBES	7	7	8
J 619	J2-04 DO YOU TROUBLESHOOT OR REPAIR CIRCUITS IN WHICH BEAM POWER TUBES ARE USED	29	29	31
J 620	J2-05 DO YOU USE OR REFER TO THE CHARACTERISTICS OF THYATRONS	57	57	62
J 621	J2-06 DO YOU TROUBLESHOOT OR REPAIR CIRCUITS IN WHICH THYATRONS ARE USED	71	71	77
J 622	J2-07 DO YOU USE OR REFER TO THE PRINCIPLES OF OPERATION OF ELECTRON GUNS OF CATHODE-RAY TUBES (CRT)	71	71	77
J 623	J2-08 DO YOU USE OR REFER TO THE PRINCIPLES OF OPERATION OF ELECTROMAGNETIC DEFLECTION SYSTEMS OF CATHODE-RAY TUBES (CRT)	64	64	69
J 624	J2-09 DO YOU USE OR REFER TO THE PRINCIPLES OF OPERATION OF ELECTROSTATIC DEFLECTION SYSTEMS OF CATHODE-RAY TUBES (CRT)	64	64	69
J 625	J2-10 DO YOU USE OR REFER TO PHOSPHOR SCREENS	71	71	77
J 626	J2-11 DO YOU USE OR REFER TO AQUADAG COATINGS	57	57	62
J 627	J2-12 DO YOU USE OR REFER TO ELECTRON OPTICS	21	21	23
J 628	J2-13 DO YOU USE OR REFER TO PERSISTENCE	36	36	38
J 629	J2-14 DO YOU USE OR REFER TO DECAY TIMES	29	29	31
J 630	J2-15 DO YOU USE OR REFER TO FLUORESCENCE	43	43	46
J 631	J2-16 DO YOU USE OR REFER TO PHOSPHORESCENCE	50	50	54
J 632	J3-01 DO YOU WORK ON TRANSMIT OR RECEIVE SYSTEMS IN YOUR PRESENT JOB	86	86	85
J 633	J3-02 DO YOU PERFORM TASKS ON FREQUENCY CONVERTERS	71	71	69
J 634	J3-03 DO YOU PERFORM TASKS ON FREQUENCY MIXERS	79	79	77
J 635	J3-04 DO YOU USE OR REFER TO THE HETERODYNING OF SIGNALS IN YOUR WORK WITH TRANSMIT OR RECEIVE SYSTEMS	71	71	69
J 636	J3-05 DO YOU PERFORM TASKS ON REACTANCE MODULATORS	57	57	54
J 637	J3-06 DO YOU PERFORM TASKS ON MODULATED OSCILLATORS	57	57	54
K 638	K1-01 DO YOU WORK ON AM TRANSMIT OR RECEIVE SYSTEMS IN YOUR PRESENT JOB	29	29	31
K 639	K1-02 DO YOU INSPECT AM TRANSMIT OR RECEIVE SYSTEMS	29	29	31
K 640	K1-03 DO YOU CLEAN AM TRANSMIT OR RECEIVE SYSTEMS	21	21	23
K 641	K1-04 DO YOU ALIGN OR ADJUST AM TRANSMIT OR RECEIVE SYSTEMS	29	29	31

SPECIAL PURPOSE  
ELECTRON TUBESHETERODYNING,  
MODULATION, AND  
DEMODULATION

AM SYSTEMS



PCT MRS RESPONDING 'YES' BY SELECTED GRPS

TASK GROUP SUMMARY  
PERCENT MEMBERS PERFORMING

DY-TSK

	SPC	SPC	SPC
	151	152	154
K 642 KI-05 DO YOU TROUBLESHOOT TO AM TRANSMIT OR RECEIVE SYSTEMS	29	29	31
K 643 KI-06 DO YOU TROUBLESHOOT TO AM TRANSMIT OR RECEIVE	29	29	31
COMPONENTS			
K 644 KI-07 DO YOU REMOVE OR REPLACE AM TRANSMIT OR RECEIVE	29	29	31
SYSTEMS			
K 645 KI-08 DO YOU REMOVE OR REPLACE AM TRANSMIT OR RECEIVE	21	21	23
COMPONENTS			
K 646 KI-09 DO YOU PERFORM TASKS ON RF OSCILLATORS	29	29	31
K 647 KI-10 DO YOU PERFORM TASKS ON RF AMPLIFIERS	29	29	31
K 648 KI-11 DO YOU PERFORM TASKS ON AUDIO AMPLIFIERS	7	7	8
K 649 KI-12 DO YOU PERFORM TASKS ON POWER AMPLIFIERS	21	21	23
K 650 KI-13 DO YOU PERFORM TASKS ON LOCAL OSCILLATORS	29	29	31
K 651 KI-14 DO YOU PERFORM TASKS ON IF AMPLIFIERS	29	29	31
K 652 KI-15 DO YOU PERFORM TASKS ON DETECTORS	29	29	31
K 653 KI-16 DO YOU PERFORM TASKS ON DON'T REMEMBER WHICH AM STAGE	7	7	8
K 654 KI-17 DO YOU USE OR REFER TO AMPLITUDE STABILIZATION IN	14	14	15
TRANSMITTERS			
K 655 KI-18 DO YOU USE OR REFER TO FREQUENCY STABILIZATION IN	21	21	23
TRANSMITTERS			
K 656 KI-19 DO YOU USE OR REFER TO SENSITIVITY OF RECEIVERS	29	29	31
K 657 KI-20 DO YOU USE OR REFER TO SELECTIVITY OF RECEIVERS	29	29	31
K 658 KI-21 DO YOU USE OR REFER TO 2ND HARMONIC DISTORTION	21	21	23
K 659 KI-22 DO YOU USE OR REFER TO BANDPASS DISTORTION	21	21	23
K 660 KI-23 DO YOU USE OR REFER TO SQUARE LAW DISTORTION	14	14	15
K 661 KI-24 DO YOU USE OR REFER TO CO-CHANNEL INTERFERENCE	14	14	15
K 662 KI-25 DO YOU USE OR REFER TO IMAGE FREQUENCIES IN RECEIVERS	14	14	15
K 663 KI-26 DO YOU USE OR REFER TO SIGNAL TO IMAGE RATIOS OR	14	14	15
IMAGE REJECTION RATIOS			
K 664 KI-27 DO YOU TRACE SIGNALS OR CURRENT PATHS THROUGH AM	29	29	31
TRANSMITTER SCHEMATIC DIAGRAMS			
K 665 KI-28 DO YOU TRACE SIGNALS OR CURRENT PATHS THROUGH AM	29	29	31
RECEIVER SCHEMATIC DIAGRAMS			
K 666 K2-01 DO YOU WORK WITH FM TRANSMIT OR RECEIVE SYSTEMS IN	21	21	15
YOUR PRESENT JOB			
K 667 K2-02 DO YOU INSPECT FM TRANSMIT OR RECEIVE SYSTEMS	29	29	23
K 668 K2-03 DO YOU CLEAN FM TRANSMIT OR RECEIVE SYSTEMS	21	21	15
K 669 K2-04 DO YOU ALIGN FM TRANSMIT OR RECEIVE SYSTEMS	29	29	23
K 670 K2-05 DO YOU TROUBLESHOOT TO FM TRANSMIT OR RECEIVE	29	29	23
SYSTEMS			
K 671 K2-06 DO YOU TROUBLESHOOT TO FM TRANSMIT OR RECEIVE	29	29	23
COMPONENTS			
K 672 K2-07 DO YOU REMOVE OR REPLACE FM TRANSMIT OR RECEIVE	21	21	15
SYSTEMS			
K 673 K2-08 DO YOU REMOVE OR REPLACE FM TRANSMIT OR RECEIVE	21	21	15
COMPONENTS			
K 674 K2-09 DO YOU PERFORM TASKS ON AUDIO AMPLIFIERS	7	7	0
K 675 K2-10 DO YOU PERFORM TASKS ON FREQUENCY MULTIPLIERS	21	21	15

FM SYSTEMS

PCT MBRS RESPONDING 'YES' BY SELECTED GRPS

TASK GROUP SUMMARY  
PERCENT MEMBERS PERFORMING

Task Description	SPC	SPC	SPC	SPC
676 K2-11 DO YOU PERFORM TASKS ON DRIVERS (INTERMEDIATE AMPLIFIERS)	21	21	15	15
677 K2-12 DO YOU PERFORM TASKS ON POWER AMPLIFIERS	21	21	15	15
678 K2-13 DO YOU PERFORM TASKS ON RF AMPLIFIERS	21	21	15	15
679 K2-14 DO YOU PERFORM TASKS ON FREQUENCY CONVERTERS	21	21	15	15
680 K2-15 DO YOU PERFORM TASKS ON IF AMPLIFIERS	21	21	15	15
681 K2-16 DO YOU PERFORM TASKS ON LIMITERS	21	21	15	15
682 K2-17 DO YOU PERFORM TASKS ON FREQUENCY DISCRIMINATORS	21	21	15	15
683 K2-18 DO YOU TRACE SIGNALS OR CURRENT PATHS THROUGH SCHEMATIC DIAGRAMS OF FM TRANSMITTERS	21	21	15	15
684 K2-19 DO YOU TRACE SIGNALS OR CURRENT PATHS THROUGH SCHEMATIC DIAGRAMS OF FM RECEIVERS	21	21	15	15
685 K3-01 DO YOU CONVERT DECIMAL (BASE 10) NUMBERS TO OCTAL (BASE 8) NUMBERS	21	21	23	23
686 K3-02 DO YOU CONVERT DECIMAL NUMBERS TO BINARY (BASE 2) NUMBERS	29	29	31	31
687 K3-03 DO YOU CONVERT OCTAL NUMBERS TO DECIMAL NUMBERS	29	29	31	31
688 K3-04 DO YOU CONVERT OCTAL NUMBERS TO BINARY NUMBERS	29	29	31	31
689 K3-05 DO YOU CONVERT BINARY NUMBERS TO DECIMAL NUMBERS	36	36	38	38
690 K3-06 DO YOU CONVERT BINARY NUMBERS TO OCTAL NUMBERS	29	29	31	31
691 K3-07 DO YOU ADD BINARY NUMBERS TO GET A SUM	29	29	31	31
692 K3-08 DO YOU SUBTRACT BINARY NUMBERS USING THE END-AROUND CARRY METHOD	21	21	23	23
693 K3-09 DO YOU SUBTRACT BINARY NUMBERS USING THE DIRECT SUBTRACTION METHOD	29	29	31	31
694 K3-10 DO YOU ADD OCTAL NUMBERS TO GET A SUM	29	29	31	31
695 L1-01 IN YOUR PRESENT JOB, DO YOU PERFORM ANY TASKS RELATING TO LOGIC FUNCTIONS	36	36	38	38
696 L1-02 DO YOU CONSTRUCT TRUTH TABLES FOR AND LOGIC SYMBOLS OR GATES	29	29	31	31
697 L1-03 DO YOU CONSTRUCT TRUTH TABLES FOR OR LOGIC SYMBOLS OR GATES	29	29	31	31
698 L1-04 DO YOU CONSTRUCT TRUTH TABLES FOR AND OR LOGIC SYMBOLS WITH STATE INDICATORS	29	29	31	31
699 L1-05 DO YOU CONSTRUCT TRUTH TABLES FOR EXCLUSIVE OR LOGIC SYMBOLS OR GATES	29	29	31	31
700 L1-06 DO YOU USE OR REFER TO TRUTH TABLES FOR AND LOGIC SYMBOLS OR GATES	29	29	31	31
701 L1-07 DO YOU USE OR REFER TO TRUTH TABLES FOR OR LOGIC SYMBOLS OR GATES	29	29	31	31
702 L1-08 DO YOU USE OR REFER TO TRUTH TABLES FOR AND OR OR LOGIC SYMBOLS WITH STATE INDICATORS	29	29	31	31
703 L1-09 DO YOU USE OR REFER TO TRUTH TABLES FOR EXCLUSIVE OR LOGIC SYMBOLS	21	21	23	23
704 L1-10 DO YOU USE OR REFER TO LOGIC SYMBOLS FOR AND GATES	29	29	31	31
705 L1-11 DO YOU USE OR REFER TO LOGIC SYMBOLS FOR OR GATES	29	29	31	31
706 L1-12 DO YOU USE OR REFER TO LOGIC SYMBOLS FOR NAND OR NOR GATES	29	29	31	31

PCT MBS RESPONDING 'YES' BY SELECTED GRPS

TASK GROUP SUMMARY  
PERCENT MEMBERS PERFORMING

	SPC	SPC	SPC
	151	152	154
L 707 L1-13 DO YOU USE OR REFER TO LOGIC SYMBOLS FOR EXCLUSIVE OR GATES	29	29	31
L 708 L2-01 IN YOUR PRESENT JOB, DO YOU PERFORM ANY TASKS RELATING TO BOOLEAN EQUATIONS, LOGIC DIAGRAMS, OR LOGIC CIRCUITS	29	29	31
L 709 L2-02 DO YOU DRAW LOGIC SYMBOLS FOR DIRECT COUPLED TRANSISTOR LOGIC (DCTL) CIRCUITS	14	14	15
L 710 L2-03 DO YOU CONSTRUCT TRUTH TABLES FOR CURRENT MODE LOGIC (CML) CIRCUITS	14	14	15
L 711 L2-04 DO YOU DRAW LOGIC DIAGRAMS FROM GIVEN BOOLEAN EQUATIONS	7	7	8
L 712 L2-05 DO YOU MEASURE INPUTS OR OUTPUTS OF LOGIC GATES	36	36	38
L 713 L2-06 DO YOU DEVELOP OR ANALYZE BOOLEAN EQUATIONS IN THE PROCESS OF TROUBLESHOOTING DIGITAL CIRCUITS	14	14	15
L 714 L2-07 DO YOU ANALYZE LOGIC CIRCUITS BY USING BOOLEAN ALGEBRA	21	21	23
L 715 L2-08 DO YOU USE OR REFER TO LOGIC SYMBOLS FOR DIRECT COUPLED TRANSISTOR LOGIC (DCTL) CIRCUIT GATES	14	14	15
L 716 L2-09 DO YOU USE OR REFER TO TRUTH TABLES FOR CURRENT MODE LOGIC (CML) CIRCUITS	14	14	15
L 717 L2-10 DO YOU USE OR REFER TO LOGIC DIAGRAMS CONSISTING OF MORE THAN ONE GATE	29	29	31
L 718 L2-11 DO YOU COMPUTE SUM AND CARRY EXPRESSIONS FOR SERIAL HALF OR FULL ADDER LOGIC DIAGRAMS	21	21	23
L 719 L2-12 DO YOU TRACE DATA FLOW THROUGH PARALLEL FULL ADDER LOGIC DIAGRAMS	21	21	23
L 720 L2-13 DO YOU WORK WITH ASTABLE (FREE RUNNING) MULTIVIBRATORS	29	29	31
L 721 L2-14 DO YOU WORK WITH BISTABLE (FLIP-FLOP) MULTIVIBRATORS	36	36	38
L 722 L2-15 DO YOU WORK WITH MONOSTABLE (ONE-SHOT) MULTIVIBRATORS	36	36	38
L 723 L2-16 DO YOU USE OR REFER TO FLIP-FLOP MULTIVIBRATOR SYMBOLS	36	36	38
L 724 L2-17 DO YOU USE OR REFER TO SINGLE-SHOT MULTIVIBRATOR SYMBOLS	36	36	38
L 725 L2-18 DO YOU USE OR REFER TO FLIP-FLOP CIRCUIT DIAGRAMS	36	36	38
L 726 L2-19 DO YOU USE OR REFER TO FLIP-FLOP TRUTH TABLES	29	29	31
L 727 L2-20 DO YOU USE OR REFER TO COMPLEMENTED FLIP-FLOP LOGIC SYMBOLS	29	29	31
L 728 L2-21 DO YOU USE OR REFER TO COMPLEMENTING FLIP-FLOP LOGIC SYMBOLS	29	29	31
L 729 L2-22 DO YOU MEASURE OUTPUT WAVESHAPES OF LOGIC CIRCUITS	36	36	38
L 730 L2-23 DO YOU TRACE DATA FLOW THROUGH COMPLEMENTED FLIP-FLOP SCHEMATIC DIAGRAMS	29	29	31
L 731 L2-24 DO YOU TRACE DATA FLOW THROUGH COMPLEMENTING FLIP-FLOP SCHEMATIC DIAGRAMS	29	29	31
L 732 L2-25 DO YOU CONSTRUCT TRUTH TABLES FOR J-K FLIP-FLOP LOGIC SYMBOLS	29	29	31

BOOLEAN  
EQUATIONS

TASK GROUP SUMMARY  
PERCENT MEMBERS PERFORMING

DY-TSK		SPC	SPC	SPC
		151	152	154
L 733	L3-01 DO YOU WORK WITH DIGITAL COUNTERS IN YOUR PRESENT JOB	29	29	31
L 734	L3-02 DO YOU USE OR REFER TO UP-COUNTERS	29	29	31
L 735	L3-03 DO YOU USE OR REFER TO DOWN-COUNTERS	29	29	31
L 736	L3-04 DO YOU USE OR REFER TO SERIAL COUNTERS	29	29	31
L 737	L3-05 DO YOU USE OR REFER TO PARALLEL COUNTERS	29	29	31
L 738	L3-06 DO YOU USE OR REFER TO RING COUNTERS	14	14	15
L 739	L3-07 DO YOU USE OR REFER TO DECADE COUNTERS	14	14	15
L 740	L3-08 DO YOU USE OR REFER TO COUNT DETECT CIRCUITS	21	21	23
L 741	L3-09 DO YOU USE OR REFER TO DOWN CLOCKS	29	29	31
L 742	L3-10 DO YOU USE OR REFER TO UP CLOCKS	29	29	31
L 743	L3-11 DO YOU TRACE DATA FLOW THROUGH LOGIC DIAGRAMS OF UP-COUNTERS HAVING COMPLEMENTED FLIP-FLOPS	29	29	31
L 744	L3-12 DO YOU TRACE DATA FLOW THROUGH LOGIC DIAGRAMS OF SERIAL UP- OR DOWN-COUNTERS HAVING COMPLEMENTING FLIP-FLOPS	29	29	31
L 745	L3-13 DO YOU TRACE DATA FLOW THROUGH LOGIC DIAGRAMS OF DECADE COUNTERS	14	14	15
L 746	L3-14 DO YOU TRACE DATA FLOW THROUGH LOGIC DIAGRAMS OF RING COUNTERS	14	14	15
L 747	L3-15 DO YOU TRACE DATA FLOW THROUGH LOGIC DIAGRAMS OF SERIAL UP-COUNTERS FEEDING A PARALLEL STORAGE REGISTER	29	29	31
L 748	L3-16 DO YOU TRACE DATA FLOW THROUGH LOGIC DIAGRAMS OF SHIFT REGISTERS	29	29	31
L 749	L3-17 DO YOU TRACE DATA FLOW THROUGH LOGIC DIAGRAMS OF OTHER TYPE OF COUNTERS	29	29	31
L 750	L3-18 DO YOU COMPUTE THE BINARY COUNT AFTER SPECIFIC INPUT PULSES FOR UP-COUNTERS HAVING COMPLEMENTED FLIP-FLOPS	21	21	23
L 751	L3-19 DO YOU COMPUTE THE BINARY COUNT AFTER SPECIFIC INPUT PULSES FOR SERIAL UP- OR DOWN-COUNTERS HAVING COMPLEMENTING FLIP-FLOPS	21	21	23
L 752	L3-20 DO YOU COMPUTE THE BINARY COUNT AFTER SPECIFIC INPUT PULSES FOR SERIAL UP-COUNTERS FEEDING A PARALLEL STORAGE REGISTER	21	21	23
L 753	L3-21 DO YOU COMPUTE THE BINARY COUNT AFTER SPECIFIC INPUT PULSES FOR OTHER TYPES OF COUNTERS	21	21	23
L 754	L3-22 DO YOU CONSTRUCT TRUTH TABLES FROM LOGIC DIAGRAMS OF DECADE COUNTERS	14	14	15
L 755	L3-23 DO YOU DETERMINE THE STATE OF EACH FLIP-FLOP IN RING COUNTERS FOR SPECIFIC INPUT PULSES	21	21	23
L 756	L3-24 DO YOU DETERMINE THE APPROPRIATE AND GATE NECESSARY IN COUNT DETECT CIRCUITS TO INDICATE A REQUIRED COUNT	14	14	15
M 757	M1-01 DO YOU WORK WITH SAWTOOTH WAVE GENERATORS	71	71	77
M 758	M1-02 DO YOU WORK WITH TRAPEZOIDAL WAVE GENERATORS	57	57	62
M 759	M1-03 DO YOU WORK WITH PULSED OSCILLATORS WITH REGENERATIVE FEEDBACK	79	79	77
M 760	M1-04 DO YOU WORK WITH PULSED OSCILLATORS WITHOUT REGENERATIVE FEEDBACK	79	79	77

COUNTERS

TIMING CIRCUITS



PCT MBR5 RESPONDING 'YES' BY SELECTED GRPS

TASK GROUP SUMMARY  
PERCENT MEMBERS PERFORMING

DY-TSK

SPC SPC SPC  
151 152 154

M 741 M1-05 DO YOU WORK WITH BLOCKING OSCILLATORS  
M 742 M1-04 DO YOU USE OR REFER TO RISE TIME  
M 743 M1-07 DO YOU USE OR REFER TO FALL OR FLYBACK TIME  
M 744 M1-08 DO YOU USE OR REFER TO SWEEP TIME  
M 745 M1-09 DO YOU USE OR REFER TO ELECTRICAL LENGTH OF SAWTOOTH

79 79 77  
64 64 62  
64 64 62  
64 64 62  
43 43 46

WAVEFORMS  
M 746 M1-10 DO YOU USE OR REFER TO PHYSICAL LENGTH OF SAWTOOTH  
WAVEFORMS  
M 747 M1-11 DO YOU USE OR REFER TO LINEAR SLOPE OF SAWTOOTH  
WAVEFORMS  
M 748 M1-12 DO YOU USE OR REFER TO GATE LENGTH OF SAWTOOTH  
WAVEFORMS

43 43 46  
43 43 46  
36 36 38  
43 43 46

M 769 M2-01 DO YOU USE SIGNAL GENERATORS IN YOUR PRESENT JOB  
M 770 M2-02 DO YOU PERFORM OPERATIONAL CHECKS WHILE USING SIGNAL  
GENERATORS  
M 771 M2-03 DO YOU PERFORM PERIODIC MAINTENANCE SUCH AS  
ADJUSTING, ALIGNING, OR CALIBRATING WHILE USING SIGNAL  
GENERATORS

USE OF SIGNAL  
GENERATORS86 86 85  
86 86 85  
79 79 77

M 772 M2-04 DO YOU TROUBLESHOOT TO AN ASSEMBLY OR SUBASSEMBLY  
WHILE USING SIGNAL GENERATORS  
M 773 M2-05 DO YOU TROUBLESHOOT TO THE SMALLEST REPLACEABLE  
COMPONENT WHILE USING SIGNAL GENERATORS  
M 774 M2-04 DO YOU USE AUDIO SINE-WAVE GENERATORS  
M 775 M2-07 DO YOU USE AUDIO NON-SINUSOIDAL WAVE GENERATORS SUCH  
AS SQUARE WAVE, TRIANGLE, PULSE, OR SPIKE  
M 776 M2-08 DO YOU USE RF GENERATORS LESS THAN 1,000 MH  
M 777 M2-09 DO YOU USE RF GENERATORS GREATER THAN 1,000 MH  
M 778 M2-10 DO YOU USE OTHER SPECIAL PURPOSE OR MULTI-FUNCTION  
GENERATORS

71 71 77  
36 36 38  
21 21 15  
43 43 46  
57 57 54  
36 36 31  
79 79 77

M 779 M3-01 IN YOUR PRESENT JOB, DO YOU PERFORM ANY TASKS DEALING  
WITH ALTERNATING CURRENT OR DIRECT CURRENT MOTORS OR  
GENERATORS

MOTORS AND  
GENERATORS57 57 62  
57 57 62

M 780 M3-02 DO YOU INSPECT MOTORS  
M 781 M3-03 DO YOU CLEAN OR LUBRICATE MOTORS  
M 782 M3-04 DO YOU OPERATE MOTORS  
M 783 M3-05 DO YOU REMOVE OR REPLACE COMPLETE MOTORS  
M 784 M3-04 DO YOU REMOVE OR REPLACE MOTOR PARTS  
M 785 M3-07 DO YOU TROUBLESHOOT AS FAR AS CHECKING WIRE  
CONNECTIONS OF MOTORS

M 786 M3-08 DO YOU TROUBLESHOOT DOWN TO COMPONENT PARTS OF MOTORS  
M 787 M3-09 DO YOU PERFORM ANY TASKS ON FIELD COILS  
M 788 M3-10 DO YOU PERFORM ANY TASKS ON ARMATURES  
M 789 M3-11 DO YOU PERFORM ANY TASKS ON ROTORS  
M 790 M3-12 DO YOU PERFORM ANY TASKS ON BRUSHES  
M 791 M3-13 DO YOU PERFORM ANY TASKS ON SLIP RINGS  
M 792 M3-14 DO YOU PERFORM ANY TASKS ON COMMUTATORS  
M 793 M3-15 DO YOU PERFORM ANY TASKS ON POLE PIECES

36 36 38  
29 29 31  
36 36 38  
29 29 31  
43 43 46  
36 36 38  
29 29 31  
29 29 31

PCT MERS RESPONDING 'YES' BY SELECTED GRPS

TASK GROUP SUMMARY  
PERCENT MEMBERS PERFORMING

DY-TSK

SPC SPC SPC  
151 152 154

N 794 M3-16 DO YOU DETERMINE OR MEASURE THE MAGNITUDE OF THE FORCE OR TORQUE CREATED BY A MOTOR

N 795 M3-17 DO YOU DETERMINE OR MEASURE THE DIRECTION OF THE MECHANICAL FORCE OR TORQUE CREATED BY A MOTOR

N 796 M3-18 DO YOU DETERMINE OR MEASURE THE MAGNITUDE OR DIRECTION OF THE INDUCED VOLTAGE IN MOTORS

N 797 M3-19 DO YOU WORK WITH SYNCHRONOUS MOTORS

N 798 M3-20 DO YOU WORK WITH INDUCTION MOTORS

N 799 M3-21 DO YOU WORK WITH SPLIT-PHASE MOTORS

N 800 M3-22 DO YOU WORK WITH SOME COMBINATION OF THE ABOVE MOTORS

N 801 M3-23 DO YOU INSPECT GENERATORS

N 802 M3-24 DO YOU CLEAN OR LUBRICATE GENERATORS

N 803 M3-25 DO YOU OPERATE GENERATORS

N 804 M3-26 DO YOU REMOVE OR REPLACE COMPLETE GENERATORS

N 805 M3-27 DO YOU REMOVE OR REPLACE GENERATOR PARTS

N 806 M3-28 DO YOU TROUBLESHOOT AS FAR AS CHECKING WIRE CONNECTIONS OF GENERATORS

N 807 M3-29 DO YOU TROUBLESHOOT DOWN TO COMPONENT PARTS OF GENERATORS

N 808 N1-01 DO YOU WORK WITH METERS IN YOUR PRESENT JOB

N 809 N1-02 DO YOU CONCEPTUALIZE OR CONSIDER THE FUNCTIONS OF PERMANENT MAGNETS

N 810 N1-03 DO YOU CONCEPTUALIZE OR CONSIDER THE FUNCTIONS OF MOVING COILS

N 811 N1-04 DO YOU CONCEPTUALIZE OR CONSIDER THE FUNCTIONS OF SPIRAL SPRINGS

N 812 N1-05 DO YOU READ METER SCALES

N 813 N1-06 DO YOU EXTEND THE RANGE OF AMMETERS

N 814 N1-07 DO YOU ZERO OHMMETERS

N 815 N1-08 DO YOU ZERO AMMETERS

N 816 N1-09 DO YOU EXTEND THE RANGE OF VOLTMETERS

N 817 N1-10 DO YOU USE OR REFER TO VOLTMETER SENSITIVITY EXPRESSED IN UNITS OF OHMS PER VOLT

N 818 M2-01 DO YOU WORK WITH SATURABLE REACTORS OR MAGNETIC AMPLIFIERS IN YOUR PRESENT JOB

N 819 M2-02 DO YOU INSPECT MAGNETIC AMPLIFIERS OR SATURABLE REACTORS

N 820 M2-03 DO YOU CLEAN MAGNETIC AMPLIFIERS OR SATURABLE REACTORS

N 821 M2-04 DO YOU ADJUST MAGNETIC AMPLIFIERS OR SATURABLE REACTORS

N 822 M2-05 DO YOU TROUBLESHOOT MAGNETIC AMPLIFIERS OR SATURABLE REACTORS

N 823 M2-06 DO YOU REMOVE OR REPLACE MAGNETIC AMPLIFIERS OR SATURABLE REACTORS

N 824 M2-07 DO YOU REMOVE OR REPLACE MAGNETIC AMPLIFIER OR SATURABLE REACTOR COMPONENTS

METER MOVEMENTS

SATURABLE REACTORS  
AND MAGNETIC  
AMPLIFIERS



PCT MBRS RESPONDING 'YES' BY SELECTED GRPS

TASK GROUP SUMMARY  
PERCENT MEMBERS PERFORMINGSPC SPC SPC  
151 152 154

## DY-TSK

0 853 01-09 DO YOU PERFORM TASKS ON SSB AUDIO AMPLIFIERS  
 0 854 01-10 DO YOU PERFORM TASKS ON SSB BALANCED MODULATORS  
 0 855 01-11 DO YOU PERFORM TASKS ON SSB CARRIER OSCILLATORS  
 0 856 01-12 DO YOU PERFORM TASKS ON SSB LC FILTERS  
 0 857 01-13 DO YOU PERFORM TASKS ON SSB CRYSTAL FILTERS  
 0 858 01-14 DO YOU PERFORM TASKS ON SSB MECHANICAL FILTERS  
 0 859 01-15 DO YOU PERFORM TASKS ON SSB OSCILLATORS  
 0 860 01-16 DO YOU PERFORM TASKS ON SSB MIXERS  
 0 861 01-17 DO YOU PERFORM TASKS ON SSB DRIVERS  
 0 862 01-18 DO YOU PERFORM TASKS ON SSB POWER AMPLIFIERS  
 0 863 01-19 DO YOU PERFORM TASKS ON SSB RF AMPLIFIERS  
 0 864 01-20 DO YOU PERFORM TASKS ON SSB FREQUENCY CONVERTERS  
 0 865 01-21 DO YOU PERFORM TASKS ON SSB IF AMPLIFIERS  
 0 866 01-22 DO YOU PERFORM TASKS ON SSB DEMODULATORS  
 0 867 01-23 DO YOU PERFORM TASKS ON SSB DON'T REMEMBER WHICH SSB  
 SYSTEM STAGES  
 0 868 01-24 DO YOU USE OR REFER TO SELECTIVE FADING  
 0 869 01-25 DO YOU USE OR REFER TO PEAK POWER  
 0 870 01-26 DO YOU USE OR REFER TO FREQUENCY STABILITY  
 0 871 01-27 DO YOU USE OR REFER TO RESPONSE CURVES FOR  
 BANDWIDTH FILTERS  
 0 872 01-28 DO YOU CALCULATE PEAK POWER OR EFFECTIVE POWER OF SSB  
 TRANSMITTERS  
 0 873 01-29 DO YOU TRACE SIGNALS OR CURRENT PATHS THROUGH SSB  
 TRANSMITTER SCHEMATIC DIAGRAMS  
 0 874 01-30 DO YOU TRACE SIGNALS OR CURRENT PATHS THROUGH SSB  
 RECEIVER SCHEMATIC DIAGRAMS  
 0 875 02-01 DO YOU WORK ON PULSE MODULATION SYSTEMS IN YOUR  
 PRESENT JOB  
 0 876 02-02 DO YOU INSPECT PULSE MODULATION SYSTEMS  
 0 877 02-03 DO YOU CLEAN PULSE MODULATION SYSTEMS  
 0 878 02-04 DO YOU ALIGN PULSE MODULATION SYSTEMS  
 0 879 02-05 DO YOU TROUBLESHOOT TO PULSE MODULATION SYSTEMS  
 0 880 02-06 DO YOU TROUBLESHOOT TO PULSE MODULATION SYSTEM  
 COMPONENTS  
 0 881 02-07 DO YOU REMOVE OR REPLACE PULSE MODULATION SYSTEMS  
 0 882 02-08 DO YOU REMOVE OR REPLACE PULSE MODULATION SYSTEM  
 COMPONENTS  
 0 883 02-09 DO YOU WORK ON PULSE-AMPLITUDE MODULATION (PAM)  
 SYSTEMS  
 0 884 02-10 DO YOU WORK ON PULSE-DURATION MODULATION (PDM)  
 SYSTEMS  
 0 885 02-11 DO YOU WORK ON PULSE-POSITION MODULATION (PPM)  
 SYSTEMS  
 0 886 02-12 DO YOU WORK ON PULSE-CODE MODULATION (PCM) SYSTEMS  
 0 887 02-13 DO YOU WORK ON LINE PULSING MODULATION SYSTEMS  
 0 888 02-14 DO YOU WORK ON LINE PULSING MODULATION SYSTEMS  
 MODULATION SYSTEM  
 DON'T REMEMBER WHICH TYPE OF

PULSE MODULATION  
SYSTEMS

64 64 64 62  
 64 64 62  
 50 50 46  
 50 50 46  
 57 57 54  
 50 50 46  
 57 57 54  
 50 50 46  
 57 57 54  
 50 50 46  
 36 36 38  
 50 50 54  
 36 36 38  
 29 29 31  
 14 14 15  
 29 29 23



TASK GROUP SUMMARY  
PERCENT MEMBERS PERFORMING

	SPC	SPC	SPC
	151	152	154
0 889 02-15 DO YOU PERFORM TASKS ON PULSE MODULATION SYSTEM POWER SUPPLIES	64	64	62
0 890 02-16 DO YOU PERFORM TASKS ON PULSE MODULATION SYSTEM CHARGING CHOKES AND CHARGING DIODES	64	64	62
0 891 02-17 DO YOU PERFORM TASKS ON PULSE MODULATION SYSTEM PULSE FORMING NETWORKS	64	64	62
0 892 02-18 DO YOU PERFORM TASKS ON PULSE MODULATION SYSTEM TIMERS	50	50	54
0 893 02-19 DO YOU PERFORM TASKS ON PULSE MODULATION SYSTEM SWITCHES SUCH AS GAS THYRATRON	50	50	54
0 894 02-20 DO YOU PERFORM TASKS ON PULSE MODULATION SYSTEM PULSE TRANSFORMERS	57	57	54
0 895 02-21 DO YOU PERFORM TASKS ON PULSE MODULATION SYSTEM TRANSMITTER TUBES	57	57	54
0 896 02-22 DO YOU PERFORM TASKS ON PULSE MODULATION SYSTEM RF AMPLIFIERS	64	64	62
0 897 02-23 DO YOU PERFORM TASKS ON PULSE MODULATION SYSTEM FREQUENCY CONVERTERS	57	57	54
0 898 02-24 DO YOU PERFORM TASKS ON PULSE MODULATION SYSTEM IF AMPLIFIERS	57	57	54
0 899 02-25 DO YOU PERFORM TASKS ON PULSE MODULATION SYSTEM DETECTORS	57	57	54
0 900 02-26 DO YOU PERFORM TASKS ON PULSE MODULATION SYSTEM VIDEO AMPLIFIERS	50	50	54
0 901 02-27 DO YOU PERFORM TASKS ON PULSE MODULATION SYSTEM POWER VIDEO AMPLIFIERS	43	43	46
0 902 02-28 DO YOU PERFORM TASKS ON PULSE MODULATION SYSTEM DON'T REMEMBER WHICH PULSE MODULATION SYSTEM STAGES	14	14	15
0 903 02-29 DO YOU USE OR REFER TO PULSE RECURRENCE FREQUENCY (PRF)	64	64	62
0 904 02-30 DO YOU USE OR REFER TO PULSE RECURRENCE TIME (PRT)	64	64	62
0 905 02-31 DO YOU USE OR REFER TO PULSE WIDTH (PW)	64	64	62
0 906 02-32 DO YOU USE OR REFER TO PULSE SHAPE	64	64	62
0 907 02-33 DO YOU USE OR REFER TO PEAK POWER	64	64	62
0 908 02-34 DO YOU USE OR REFER TO AVERAGE POWER	64	64	62
0 909 02-35 DO YOU CALCULATE PULSE RECURRENCE TIME (PRT) OR PULSE RECURRENCE FREQUENCY (PRF)	57	57	62
0 910 02-36 DO YOU MEASURE PULSE RECURRENCE TIME (PRT) OR PULSE RECURRENCE FREQUENCY (PRF)	64	64	62
0 911 02-37 DO YOU USE FORMULAS TO CALCULATE AVERAGE POWER OR PEAK POWER OF PULSE MODULATION TRANSMIT SYSTEMS	50	50	54
0 912 02-38 DO YOU TRACE SIGNALS OR CURRENT PATHS THROUGH PULSE MODULATION TRANSMITTER SCHEMATIC DIAGRAMS	64	64	62
0 913 02-39 DO YOU TRACE SIGNALS OR CURRENT PATHS THROUGH PULSE MODULATION RECEIVER SCHEMATIC DIAGRAMS	64	64	62
0 914 03-01 DO YOU WORK WITH ANTENNAS IN YOUR PRESENT JOB	79	79	77
0 915 03-02 DO YOU INSPECT ANTENNAS	79	79	77

ANTENNAS

PCT MBRS RESPONDING 'YES' BY SELECTED GRPS

TASK GROUP SUMMARY  
PERCENT MEMBERS PERFORMING

	SPC	SPC	SPC
	151	152	154
0 914 03-03 DO YOU CLEAN ANTENNAS	79	79	77
0 917 03-04 DO YOU PHYSICALLY ALIGN ANTENNAS	50	50	54
0 918 03-05 DO YOU ELECTRICALLY ALIGN ANTENNAS	43	43	46
0 919 03-06 DO YOU TROUBLESHOOT TO ANTENNAS	71	71	69
0 920 03-07 DO YOU TROUBLESHOOT TO ANTENNA COMPONENTS	50	50	54
0 921 03-08 DO YOU REMOVE OR INSTALL ANTENNAS	71	71	69
0 922 03-09 DO YOU REMOVE OR REPLACE COMPONENTS OF ANTENNAS	57	57	62
0 923 03-10 DO YOU USE OR REFER TO TECHNICAL DATA CONTAINING REPRESENTATIONS OF E OR ELECTRIC FIELD LINES	29	29	31
0 924 03-11 DO YOU USE OR REFER TO TECHNICAL DATA CONTAINING REPRESENTATIONS OF H OR MAGNETIC FIELD LINES	29	29	31
0 925 03-12 DO YOU DETERMINE THE DIRECTION OF THE MAGNETIC LINES IN RELATION TO THE ELECTRIC LINES OF FORCE FOR ANTENNAS	21	21	23
0 926 03-13 DO YOU USE OR REFER TO THE GENERAL RULE THAT ANTENNAS WHICH ARE OF CORRECT LENGTH (HALF-WAVE) ACT AS INDUCTIVE LOADS TO THE GENERATOR	21	21	23
0 927 03-14 DO YOU USE OR REFER TO THE GENERAL RULE THAT ANTENNAS WHICH ARE LONGER THAN A HALF-WAVE ACT AS INDUCTIVE LOADS TO THE GENERATOR	21	21	23
0 928 03-15 DO YOU USE OR REFER TO THE GENERAL RULE THAT ANTENNAS WHICH ARE SHORTER THAN A HALF-WAVE ACT AS CAPACITIVE LOADS TO THE GENERATOR	21	21	23
0 929 03-16 DO YOU WORK WITH HERTZ ANTENNAS	21	21	23
0 930 03-17 DO YOU WORK WITH MARCONI ANTENNAS	14	14	15
0 931 03-18 DO YOU WORK WITH BROADSIDE ARRAYS	43	43	38
0 932 03-19 DO YOU WORK WITH END-FIRE ARRAYS	29	29	23
0 933 03-20 DO YOU WORK WITH CARDIOID ARRAYS	21	21	23
0 934 03-21 DO YOU WORK WITH COLLINEAR ARRAYS	21	21	15
0 935 03-22 DO YOU USE OR REFER TO THE TERM ELECTROMAGNETIC INDUCTION FIELDS WHEN WORKING WITH ANTENNAS	14	14	15
0 936 03-23 DO YOU MEASURE ELECTROMAGNETIC INDUCTION FIELDS OF ANTENNAS	14	14	15
0 937 03-24 DO YOU USE OR REFER TO THE TERM ELECTROMAGNETIC RADIATION FIELDS WHEN WORKING WITH ANTENNAS	29	29	23
0 938 03-25 DO YOU MEASURE ELECTROMAGNETIC RADIATION FIELDS OF ANTENNAS	21	21	15
0 939 03-26 DO YOU USE OR REFER TO THE TIME PHASE OF ELECTRIC (E) AND MAGNETIC (H) COMPONENTS IN ANTENNA RADIATION	7	7	8
0 940 03-27 DO YOU USE OR REFER TO THE TIME PHASE OF ELECTRIC (E) AND MAGNETIC (H) COMPONENTS IN ANTENNA INDUCTION FIELD	7	7	8
0 941 03-28 ARE ANY OF THE ANTENNAS YOU WORK ON LINEARLY POLARIZED	43	43	38
0 942 03-29 ARE ANY OF THE ANTENNAS YOU WORK ON CIRCULARLY POLARIZED	21	21	15
0 943 03-30 DO YOU MEASURE OR DETERMINE THE POLARITY OF ANTENNAS YOU WORK ON	14	14	8
0 944 03-31 DO YOU CONSTRUCT, OR MAKE THE CALCULATIONS NECESSARY TO CONSTRUCT, ANTENNAS OF CORRECT LENGTH FOR SPECIFIC WAVELENGTHS	7	7	8

PCT MBRS RESPONDING 'YES' BY SELECTED GRPS

TASK GROUP SUMMARY  
PERCENT MEMBERS PERFORMING

		UY-TSK		SPC SPC SPC		TRANSMISSION LINES
				151 152 154		
0	945 03-32 DO THE ANTENNA ARRAYS YOU WORK WITH CONTAIN PARASITIC ELEMENTS	21	21	23		
0	946 03-33 DO THE ANTENNA ARRAYS YOU WORK WITH CONTAIN PARASITIC ELEMENTS SERVING AS DIRECTORS	21	21	23		
0	947 03-34 DO THE ANTENNA ARRAYS YOU WORK WITH CONTAIN PARASITIC ELEMENTS SERVING AS REFLECTORS	21	21	23		
0	948 03-35 DO THE ANTENNA ARRAYS YOU WORK WITH CONTAIN DON'T REMEMBER WHAT KIND OF ELEMENTS	64	64	62		
0	949 03-36 DO YOU WORK ON UNIDIRECTIONAL ANTENNAS	57	57	59		
0	850 03-37 DO YOU WORK ON BIDIRECTIONAL ANTENNAS	29	29	23		
0	851 03-38 DO YOU WORK ON DON'T REMEMBER THE DIRECTIONALITY	36	36	38		
0	852 03-39 DO YOU WORK WITH ROTAR ANTENNA ARRAYS	57	57	62		
P	953 PI-01 IN YOUR PRESENT JOB DO YOU WORK WITH TRANSMISSION LINES (TRANSMISSION LINES ARE DEFINED TO INCLUDE LEADS BETWEEN RECEIVERS AND ANTENNAS, TELEPHONE LEADS, AS WELL AS HIGH VOLTAGE POWER LINES, ETC. DO NOT CONSIDER WAVEGUIDES AS TRANSMISSION LINES)	79	79	77		
P	954 PI-02 DO YOU REFER TO OR USE COPPER LOSS OR I2R LOSS IN TRANSMISSION LINES	14	14	15		
P	955 PI-03 DO YOU REFER TO OR USE SKIN EFFECTS OF HIGH FREQUENCY CURRENTS IN TRANSMISSION LINES	14	14	15		
P	956 PI-04 DO YOU REFER TO OR USE RADIATION LOSS IN TRANSMISSION LINES	36	36	31		
P	957 PI-05 DO YOU USE OR REFER TO DIELECTRIC LOSS IN TRANSMISSION LINES	7	7	8		
P	958 PI-06 DO YOU USE OR REFER TO LEAKAGE LOSSES IN TRANSMISSION LINES	29	29	23		
P	959 PI-07 DO YOU WORK WITH TWISTED PAIR TRANSMISSION LINES	21	21	23		
P	960 PI-08 DO YOU WORK WITH TWIN LEAD TRANSMISSION LINES	21	21	23		
P	961 PI-09 DO YOU WORK WITH OPEN TWO-WIRE TRANSMISSION LINES	14	14	15		
P	962 PI-10 DO YOU WORK WITH FLEXIBLE COAXIAL CABLE TRANSMISSION LINES	71	71	69		
P	963 PI-11 DO YOU WORK WITH RIGID COAXIAL CABLE TRANSMISSION LINES	71	71	69		
P	964 PI-12 DO YOU TROUBLESHOOT TRANSMISSION LINES	64	64	62		
P	965 PI-13 DO YOU ANALYZE VOLTAGE OR CURRENT WAVEFORMS IN TRANSMISSION LINES TO DETERMINE THE TYPE OF TERMINATION (OPEN, SHORTED, CAPACITIVE, INDUCTIVE)	7	7	8		
P	966 PI-14 DO YOU SELECT APPROPRIATE TRANSMISSION LINES TERMINATIONS TO ACHIEVE DESIRED WAVEFORMS	29	29	31		
P	967 PI-15 DO YOU USE OR REFER TO SCHEMATIC SYMBOLS FOR LINE TERMINATIONS IN TERMS OF CIRCUIT TERMINATIONS	43	43	46		
P	968 PI-16 DO YOU MEASURE STANDING WAVE RATIOS (SWR) OF TRANSMISSION LINES	57	57	54		
P	969 PI-17 DO YOU CALCULATE STANDING WAVE RATIOS (SWR) OF TRANSMISSION LINES	43	43	46		
P	970 PI-18 DO YOU PERFORM THE CALCULATIONS NECESSARY TO DETERMINE THE IMPEDANCE AND LENGTH OF QUARTER - WAVELENGTH MATCHING TRANSFORMERS TO MATCH TRANSMISSION LINES TO LOADS	7	7	8		

PCT MBRS RESPONDING 'YES' BY SELECTED GRPS

TASK GROUP SUMMARY  
PERCENT MEMBERS PERFORMING

		SPC SPC SPC			
		151 152 154			
CY-TSK					
P 971	P1-19 DO YOU WORK WITH TRANSMISSION LINES WHICH ARE MATCHED TO LOADS USING MATCHING TRANSFORMERS	29	29	23	
P 972	P1-20 DO YOU WORK WITH TRANSMISSION LINES WHICH ARE MATCHED TO LOADS USING DELTA MATCHING	7	7	8	
P 973	P1-21 DO YOU SELECT THE TYPE OF TRANSMISSION LINE NEEDED FOR PARTICULAR JOBS WITHOUT REFERRING TO TECHNICAL DATA	7	7	8	
P 974	P1-22 DO YOU USE OR REFER TO THE TERM CHARACTERISTIC IMPEDANCE (Z0) OF TRANSMISSION LINES	21	21	23	
P 975	P1-23 DO YOU CALCULATE THE CHARACTERISTIC IMPEDANCE (Z0) OF TRANSMISSION LINES	14	14	15	
P 976	P1-24 DO YOU USE OR REFER TO THE TERM CUTOFF FREQUENCY OF TRANSMISSION LINES	21	21	23	
P 977	P1-25 DO YOU USE OR REFER TO THE TERM VELOCITY FACTOR (K) OF TRANSMISSION LINES	14	14	15	
P 978	P1-26 DO YOU COMPUTE THE ELECTRICAL LENGTH OF TRANSMISSION LINES FOR PARTICULAR FREQUENCIES	36	36	38	
P 979	P1-27 DO YOU CONSTRUCT TRANSMISSION LINES OF PARTICULAR ELECTRICAL LENGTH FOR GIVEN FREQUENCIES	36	36	38	
P 980	P1-28 DO YOU USE OR REFER TO THE GENERAL RULE THAT AS THE FREQUENCY INCREASES AND THE PHYSICAL LENGTH OF TRANSMISSION LINES REMAIN CONSTANT, THE ELECTRICAL LENGTH INCREASES	29	29	31	
P 981	P1-29 DO YOU WORK WITH NONRESONANT (FLAT) TRANSMISSION LINES	21	21	23	
P 982	P1-30 DO YOU WORK WITH RESONANT TRANSMISSION LINES	36	36	31	
P 983	P1-31 DO YOU WORK WITH TRANSMISSION LINES WHICH ARE MATCHED TO LOADS USING STUB MATCHING	36	36	38	
P 984	P2-01 DO YOU WORK WITH WAVEGUIDES OR CAVITY RESONATORS IN YOUR PRESENT JOB	79	79	85	
P 985	P2-02 DO YOU INSPECT WAVEGUIDES OR CAVITY RESONATORS	79	79	85	WAVEGUIDES AND CAVITY RESONATORS
P 986	P2-03 DO YOU CLEAN WAVEGUIDES OR CAVITY RESONATORS	79	79	85	
P 987	P2-04 DO YOU BEND WAVEGUIDES OR CAVITY RESONATORS	14	14	15	
P 988	P2-05 DO YOU TWIST WAVEGUIDES OR CAVITY RESONATORS	14	14	15	
P 989	P2-06 DO YOU PRESSURIZE WAVEGUIDES OR CAVITY RESONATORS	50	50	54	
P 990	P2-07 DO YOU PURGE WAVEGUIDES OR CAVITY RESONATORS	36	36	38	
P 991	P2-08 DO YOU TROUBLESHOOT WAVEGUIDES OR CAVITY RESONATORS	43	43	46	
P 992	P2-09 DO YOU REMOVE OR INSTALL COMPLETE WAVEGUIDES	50	50	54	
P 993	P2-10 DO YOU REMOVE OR INSTALL WAVEGUIDE SECTIONS	57	57	62	
P 994	P2-11 DO YOU REMOVE OR INSTALL DUMMY LOADS	57	57	62	
P 995	P2-12 DO YOU REMOVE OR INSTALL E BENDS	29	29	31	
P 996	P2-13 DO YOU REMOVE OR INSTALL H BENDS	29	29	31	
P 997	P2-14 DO YOU REMOVE OR INSTALL OTHER BENDS	50	50	54	
P 998	P2-15 DO YOU REMOVE OR INSTALL CHOKE JOINTS	29	29	31	
P 999	P2-16 DO YOU REMOVE OR INSTALL ROTATING JOINTS	43	43	46	
P1000	P2-17 DO YOU REMOVE OR INSTALL DIRECTIONAL COUPLERS	50	50	54	
P1001	P2-18 DO YOU REMOVE OR INSTALL BIDIRECTIONAL COUPLERS	50	50	54	
P1002	P2-19 DO YOU USE OR REFER TO "A" WALL OF WAVEGUIDES	7	7	8	



# PCT NRS RESPONDING 'YES' BY SELECTED GRPS

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## TASK GROUP SUMMARY PERCENT MEMBERS PERFORMING

DY-TSK		SPC	SPC	SPC
		181	152	154
P1003	P2-20 DO YOU USE OR REFER TO "B" WALL OF WAVEGUIDES	7	7	8
P1004	P2-21 DO YOU USE OR REFER TO CUTOFF FREQUENCY OF WAVEGUIDES	29	29	31
P1005	P2-22 DO YOU USE OR REFER TO FREQUENCY-DETERMINING WALL OF WAVEGUIDES	7	7	8
P1006	P2-23 DO YOU USE OR REFER TO POWER-DETERMINING WALL OF WAVEGUIDES	14	14	15
P1007	P2-24 DO YOU USE OR REFER TO ELECTRIC FIELD BOUNDARY CONDITIONS	0	0	0
P1008	P2-25 DO YOU USE OR REFER TO MAGNETIC FIELD BOUNDARY CONDITIONS	0	0	0
P1009	P2-26 DO YOU USE OR REFER TO DUPLEXER FIELD BOUNDARY CONDITIONS	14	14	15
P1010	P2-27 DO YOU USE OR REFER TO THE GENERAL RULE THAT MOST WAVEGUIDES ARE MADE WITH A "B" WALL SIZE OF .7 WAVELENGTHS OF THE OPERATING FREQUENCY	14	14	16
P1011	P2-28 DO YOU USE OR REFER TO THE GENERAL RULE THAT MOST "A" WALLS RANGE FROM .2 TO .5 WAVELENGTHS IN SIZE, WITH .35 USED AS AN AVERAGE	7	7	8
P1012	P2-29 ARE YOU CONCERNED WITH THE MATERIAL (SUCH AS BRASS) WHICH WAVEGUIDES ARE MADE OF	50	50	54
P1013	P2-30 DO YOU COMPUTE THE LENGTH OF A WAVEGUIDE FOR SPECIFIC INSTALLATION	0	0	0
P1014	P2-31 DO YOU USE THE RIGHT HAND RULE TO DETERMINE THE DIRECTION OF PROPAGATION, DIRECTION OF "E" FIELD, OR DIRECTION OF "H" FIELD IN WAVEGUIDES	21	21	23
P1015	P2-32 DO YOU USE OR REFER TO THE TIME PHASE OF PEAK "E" OR "H" LINES IN WAVEGUIDES	14	14	15
P1016	P2-33 DO YOU MEASURE THE TIME PHASE OF "E" OR "H" LINES IN WAVEGUIDES	14	14	15
P1017	P2-34 DO YOU USE OR REFER TO THE SPACE QUADRATURE OF "E" OR "H" LINES IN WAVEGUIDES	14	14	15
P1018	P2-35 ARE HIGH POWER PROBES USED ON WAVEGUIDES OR CAVITY RESONATORS YOU WORK WITH	36	36	38
P1019	P2-36 ARE LOW POWER PROBES USED ON WAVEGUIDES OR CAVITY RESONATORS YOU WORK WITH	36	36	38
P1020	P2-37 ARE LOOPS USED ON WAVEGUIDES OR CAVITY RESONATORS YOU WORK WITH	36	36	38
P1021	P2-38 ARE APERTURES (WINDOWS OR IRISES) USED ON WAVEGUIDES OR CAVITY RESONATORS YOU WORK WITH	50	50	54
P1022	P2-39 ARE DON'T REMEMBER THE KIND OF ENERGY COUPLING USED ON WAVEGUIDES OR CAVITY RESONATORS YOU WORK WITH	36	36	38
P1023	P2-40 DO YOU DETERMINE WHERE PROBES SHOULD BE MOUNTED IN WAVEGUIDES OR CAVITY RESONATORS WITHOUT REFERRING TO TECHNICAL DATA	14	14	15
P1024	P2-41 DO YOU DETERMINE THE POSITIONING OF LOOPS IN WAVEGUIDES OR CAVITY RESONATORS WITHOUT REFERRING TO TECHNICAL DATA	14	14	15

PCT MEMS RESPONDING 'YES' BY SELECTED GRPS

TASK GROUP SUMMARY  
PERCENT MEMBERS PERFORMING

DY-TSK

SPC SPC SPC  
151 152 154P1025 P2-42 DO YOU DETERMINE THE POSITIONING OR SIZE OF APERTURES  
IN WAVEGUIDES OR CAVITY RESONATORS WITHOUT REFERRING TO  
TECHNICAL DATA

14 14 15

P1026 P2-43 ARE CHOKE JOINTS USED IN WAVEGUIDES OR CAVITY

29 29 31

RESONATORS YOU WORK WITH

57 57 62

P1027 P2-44 ARE ROTATING JOINTS USED IN WAVEGUIDES OR CAVITY

36 36 38

RESONATORS YOU WORK WITH

36 36 38

P1028 P2-45 ARE DONUT REMEMBERS THE KIND OF JOINTS USED IN

21 21 23

WAVEGUIDES OR CAVITY RESONATORS YOU WORK WITH

29 29 31

P1029 P2-46 DO YOU TUNE CAVITY RESONATORS USING CAPACITIVE TUNING

43 43 46

P1030 P2-47 DO YOU TUNE CAVITY RESONATORS USING INDUCTIVE TUNING

43 43 46

P1031 P2-48 DO YOU TUNE CAVITY RESONATORS USING VOLUME TUNING

43 43 46

P1032 P2-49 DO YOU TUNE CAVITY RESONATORS USING DONUT REMEMBERS

43 43 46

THE METHOD OF TUNING

43 43 46

P1033 P2-50 DO YOU MEASURE THE FREQUENCY OF SIGNALS IN CAVITY

57 57 62

RESONATORS

7 7 8

P1034 P3-01 IN YOUR PRESENT JOB DO YOU WORK WITH KLYSTRONS,  
TRAVELING WAVE TUBES (TWT), PARAMETRIC AMPLIFIERS, OR  
MAGNETRONS

7 7 8

P1035 P3-02 DO YOU USE OR REFER TO INTERELECTRODE CAPACITANCE

7 7 8

P1036 P3-03 DO YOU USE OR REFER TO ELECTRON TRANSIT TIME

7 7 8

P1037 P3-04 DO YOU USE OR REFER TO LEAD INDUCTANCE

29 29 31

P1038 P3-05 DO YOU USE OR REFER TO RF LOSSES IN EXTERNAL  
CIRCUITRY

7 7 8

P1039 P3-06 DO YOU USE OR REFER TO PRINCIPLE OF ELECTRON VELOCITY  
MODULATION

7 7 8

P1040 P3-07 DO YOU USE OR REFER TO ELECTRON BUNCHING

14 14 15

P1041 P3-08 DO YOU WORK WITH TWO-CAVITY KLYSTRONS

14 14 15

P1042 P3-09 DO YOU WORK WITH THREE-CAVITY KLYSTRONS

50 50 54

P1043 P3-10 DO YOU WORK WITH REFLEX KLYSTRONS

14 14 15

P1044 P3-11 DO YOU WORK WITH TRAVELING-WAVE TUBES (TWT)

50 50 54

P1045 P3-12 DO YOU WORK WITH NONDEGENERATIVE PARAMETRIC  
AMPLIFIERS

21 21 23

P1046 P3-13 DO YOU WORK WITH UP-CONVERTER PARAMETRIC AMPLIFIERS

57 57 62

P1047 P3-14 DO YOU WORK WITH MAGNETRONS

43 43 46

P1048 P3-15 DO YOU INSPECT KLYSTRONS OR TWT

36 36 38

P1049 P3-16 DO YOU CLEAN KLYSTRONS OR TWT

43 43 46

P1050 P3-17 DO YOU TUNE KLYSTRONS OR TWT ELECTRICALLY

36 36 38

P1051 P3-18 DO YOU TUNE KLYSTRONS OR TWT MECHANICALLY

50 50 54

P1052 P3-19 DO YOU PERFORM OPERATIONAL CHECKS OF KLYSTRONS OR  
TWT

43 43 46

P1053 P3-20 DO YOU TROUBLESHOOT KLYSTRONS OR TWT

50 50 54

P1054 P3-21 DO YOU REMOVE OR REPLACE COMPLETE KLYSTRON OR TWT

14 14 15

P1055 P3-22 DO YOU REMOVE OR REPLACE KLYSTRON OR TWT COMPONENTS

57 57 62

P1056 P3-23 DO YOU INSPECT PARAMETRIC AMPLIFIERS

43 43 46

P1057 P3-24 DO YOU CLEAN PARAMETRIC AMPLIFIERS

50 50 54

P1058 P3-25 DO YOU ADJUST PARAMETRIC AMPLIFIERS

MICROWAVE  
AMPLIFIERS AND  
OSCILLATORS

PCT MRS RESPONDING +YES+ BY SELECTED GRPS

TASK GROUP SUMMARY  
PERCENT MEMBERS PERFORMING

DY-TSK

	SPC	SPC	SPC
	151	152	154
P1054 P3-26 DO YOU TUNE PARAMETRIC AMPLIFIERS	50	50	54
P1060 P3-27 DO YOU PERFORM OPERATIONAL CHECKS OF PARAMETRIC AMPLIFIERS	57	57	62
P1061 P3-28 DO YOU TROUBLESHOOT PARAMETRIC AMPLIFIERS	50	50	54
P1062 P3-29 DO YOU REMOVE OR REPLACE COMPLETE PARAMETRIC AMPLIFIER	50	50	54
P1063 P3-30 DO YOU REMOVE OR REPLACE PARAMETRIC AMPLIFIER COMPONENTS	29	29	31
P1064 P3-31 DO YOU INSPECT MAGNETRONS	57	57	62
P1065 P3-32 DO YOU CLEAN MAGNETRONS	50	50	54
P1066 P3-33 DO YOU ADJUST MAGNETRONS	21	21	23
P1067 P3-34 DO YOU TUNE MAGNETRONS	50	50	54
P1068 P3-35 DO YOU PERFORM OPERATIONAL CHECKS OF MAGNETRONS	50	50	54
P1069 P3-36 DO YOU TROUBLESHOOT MAGNETRONS	43	43	46
P1070 P3-37 DO YOU REMOVE OR REPLACE COMPLETE MAGNETRON	50	50	54
P1071 P3-38 DO YOU REMOVE OR REPLACE MAGNETRON COMPONENTS	7	7	8
P1072 P3-39 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF TWO-CAVITY KLYSTRONS COLLECTOR PLATES	7	7	8
P1073 P3-40 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF TWO-CAVITY KLYSTRONS CATCHER CAVITIES	7	7	8
P1074 P3-41 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF TWO-CAVITY KLYSTRONS CATCHER GRIDS	7	7	8
P1075 P3-42 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF TWO-CAVITY KLYSTRONS FEEDBACK LOOPS	14	14	15
P1076 P3-43 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF TWO-CAVITY KLYSTRONS DRIFT SPACES	7	7	8
P1077 P3-44 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF TWO-CAVITY KLYSTRONS BUNCHER GRIDS	14	14	15
P1078 P3-45 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF TWO-CAVITY KLYSTRONS BUNCHER CAVITIES	14	14	15
P1079 P3-46 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF TWO-CAVITY KLYSTRONS CONTROL GRIDS	14	14	15
P1080 P3-47 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF TWO-CAVITY KLYSTRONS CATHODES	14	14	15
P1081 P3-48 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF REFLEX KLYSTRON REFLECTOR (REFLECTOR) PLATES	50	50	54
P1082 P3-49 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF REFLEX KLYSTRON GRIDS	50	50	54
P1083 P3-50 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF REFLEX KLYSTRON GRID CAVITY GAPS	43	43	46
P1084 P3-51 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF REFLEX KLYSTRON RESONANT CAVITIES	43	43	46
P1085 P3-52 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF REFLEX KLYSTRON MAGNETIC COUPLING LOOPS	36	36	38
P1086 P3-53 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF REFLEX KLYSTRON FILAMENTS	43	43	46
P1087 P3-54 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF REFLEX KLYSTRON CATHODES	50	50	54

PCT MEMS RESPONDING 'YES' BY SELECTED GRPS

TASK GROUP SUMMARY  
PERCENT MEMBERS PERFORMING

Task Description	SPC	SPC	SPC
151	152	154	
DI-TSK			
P1088 P3-55 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF REFLEX KLYSTRON OUTPUT LEADS	50	50	54
P1089 P3-56 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF TRAVELING-WAVE TUBES FILAMENTS	7	7	8
P1090 P3-57 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF TRAVELING-WAVE TUBES CATHODES	7	7	8
P1091 P3-58 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF TRAVELING-WAVE TUBES MODULATOR GRIDS	7	7	8
P1092 P3-59 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF TRAVELING-WAVE TUBES ANODES	7	7	8
P1093 P3-60 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF TRAVELING-WAVE TUBES HELIXES	7	7	8
P1094 P3-61 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF TRAVELING-WAVE TUBES COLLECTORS	7	7	8
P1095 P3-62 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF TRAVELING-WAVE TUBES MAGNETS	0	0	0
P1096 P3-63 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF TRAVELING-WAVE TUBES ATTENUATORS	0	0	0
P1097 P3-64 DO YOU PERFORM TASKS ON PARAMETRIC AMPLIFIER FERRITE CIRCULATORS	7	7	8
P1098 P3-65 DO YOU PERFORM TASKS ON PARAMETRIC AMPLIFIER SIGNAL CAVITIES	29	29	31
P1099 P3-66 DO YOU PERFORM TASKS ON PARAMETRIC AMPLIFIER IDLEN CAVITIES	29	29	31
P1100 P3-67 DO YOU PERFORM TASKS ON PARAMETRIC AMPLIFIER VARACTOR	29	29	31
P1101 P3-68 DO YOU PERFORM TASKS ON PARAMETRIC AMPLIFIER FERRITE ISOLATORS	7	7	8
P1102 P3-69 DO YOU PERFORM TASKS ON PARAMETRIC AMPLIFIER REVERSE-BIAS BATTERIES	14	14	15
P1103 P3-70 DO YOU PERFORM TASKS ON ANODES	21	21	23
P1104 P3-71 DO YOU PERFORM TASKS ON ANODE COOLING PINS	7	7	8
P1105 P3-72 DO YOU PERFORM TASKS ON COUPLING LOOPS	14	14	15
P1106 P3-73 DO YOU PERFORM TASKS ON HEATER LEADS	14	14	15
P1107 P3-74 DO YOU PERFORM TASKS ON RESONANT CAVITIES	21	21	23
P1108 P3-75 DO YOU PERFORM TASKS ON CATHODES	7	7	8
P1109 P3-76 DO YOU PERFORM TASKS ON MAGNETS	7	7	8
Q1110 Q1-01 DO YOU USE OR REFER TO STORAGE REGISTERS	36	36	31
Q1111 Q1-02 DO YOU USE OR REFER TO SHIFT REGISTERS	36	36	31
Q1112 Q1-03 DO YOU USE OR REFER TO LOGIC SYMBOLS OF SHIFT REGISTERS	36	36	31
Q1113 Q1-04 DO YOU USE OR REFER TO LOGIC SYMBOLS OF STORAGE REGISTERS	36	36	31
Q1114 Q1-05 DO YOU TRACE THE DATA FLOW THROUGH LOGIC DIAGRAMS OF SHIFT REGISTERS	36	36	31
Q1115 Q1-06 DO YOU TRACE THE DATA FLOW THROUGH LOGIC DIAGRAMS OF OTHER TYPE OF REGISTERS	43	43	38

REGISTERS



PCT M8RS RESPONDING 'YES' BY SELECTED GRPS

TASK GROUP SUMMARY  
PERCENT MEMBERS PERFORMING

DY-TSK

SPC SPC SPC  
151 152 154Q1116 Q1-07 DO YOU DETERMINE THE STATE OF EACH FLIP-FLOP OF A  
SHIFT REGISTER AFTER A SPECIFIED NUMBER OF SHIFT PULSES  
HAVE PASSED

29 29 23

Q1117 Q2-01 DO YOU WORK WITH DIGITAL COUNTERS, REGISTERS, OR  
STORAGE DEVICES IN YOUR PRESENT JOB

29 29 31

STORAGE DEVICES

Q1118 Q2-02 DO YOU USE OR REFER TO DELAY LINES

29 29 31

Q1119 Q2-03 DO YOU USE OR REFER TO MAGNETIC CORES

21 21 23

Q1120 Q2-04 DO YOU USE OR REFER TO MAGNETIC DRUMS

7 7 8

Q1121 Q2-05 DO YOU USE OR REFER TO MAGNETIC TAPES

7 7 8

Q1122 Q3-06 DO YOU USE OR REFER TO ACCESS TIME OR SPEED OR

21 21 23

MEMORY SYSTEMS

Q1123 Q2-07 DO YOU USE OR REFER TO WORD CAPACITY OF MEMORY

14 14 15

SYSTEMS

Q1124 Q2-08 DO YOU USE OR REFER TO VOLATILITY OF MEMORY SYSTEMS

7 7 8

Q1125 Q2-09 DO YOU USE OR REFER TO LOGIC SYMBOL OF DELAY LINES

21 21 23

Q1126 Q3-01 IN YOUR PRESENT JOB, DO YOU WORK WITH DIGITAL-TO-

36 36 38

ANALOG (D/A) CONVERTERS, ANALOG-TO-DIGITAL (A/D)

DIGITAL TO

CONVERTERS, OR BINARY-TO-DECIMAL READOUT CONVERTERS

ANALOG CONVERTERS

Q1127 Q3-02 DO YOU COMPUTE OUTPUT VOLTAGES FOR ELECTROMECHANICAL

7 7 8

DIGITAL-TO-ANALOG (D/A) CONVERTERS FOR GIVEN INPUT

VOLTAGES

Q1128 Q3-03 DO YOU USE OR REFER TO THE GENERAL RULE THAT THE

14 14 15

COUNT IN ELECTROMECHANICAL DIGITAL-TO-ANALOG (D/A)

CONVERTERS IS DETERMINED BY ADDING THE DENOMINATORS OF THE

RESISTORS

Q1129 Q3-04 DO YOU COMPUTE ANALOG VOLTAGES FOR GIVEN BINARY

7 7 8

COUNTS IN ELECTRONIC DIGITAL-TO-ANALOG (D/A) CONVERTERS

Q1130 Q3-05 DO YOU PERFORM SAMPLE FUNCTION TASKS ON VARIABLE TIME

21 21 23

ANALOG-TO-DIGITAL (A/D) CONVERTER CIRCUITS

Q1131 Q3-06 DO YOU PERFORM HOLD FUNCTION TASKS ON VARIABLE TIME

21 21 23

ANALOG-TO-DIGITAL (A/D) CONVERTER CIRCUITS

Q1132 Q3-07 DO YOU PERFORM COMPARE FUNCTION TASKS ON VARIABLE

21 21 23

TIME ANALOG-TO-DIGITAL (A/D) CONVERTER CIRCUITS

Q1133 Q3-08 DO YOU PERFORM DIGITIZE FUNCTION TASKS ON VARIABLE

21 21 23

TIME ANALOG-TO-DIGITAL (A/D) CONVERTER CIRCUITS

Q1134 Q3-09 DO YOU PERFORM DON'T REMEMBER WHICH FUNCTION TASKS

21 21 23

ON VARIABLE TIME ANALOG-TO-DIGITAL (A/D) CONVERTER

CIRCUITS

Q1135 Q3-10 DO YOU USE OR REFER TO SAMPLE FUNCTION OF A/D

21 21 23

CONVERTERS

Q1136 Q3-11 DO YOU USE OR REFER TO HOLD FUNCTION OF A/D

21 21 23

CONVERTERS

Q1137 Q3-12 DO YOU USE OR REFER TO COMPARE FUNCTION OF A/D

21 21 23

CONVERTERS

Q1138 Q3-13 DO YOU USE OR REFER TO DIGITAL FUNCTION OF A/D

21 21 23

CONVERTERS

Q1139 Q3-14 DO YOU PERFORM ANY TASKS ON MECHANICAL ANALOG-TO-

21 21 23

DIGITAL (A/D) CONVERTERS

TASK GROUP SUMMARY  
PERCENT MEMBERS PERFORMING

## DY-TSK

		SPC	SPC	SPC	
		151	152	154	
R110 R1-01 DO YOU WORK WITH PHANTASTRON CIRCUITRY IN YOUR PRESENT JOB		36	36	31	PHANTASTRONS
R111 R2-01 IN YOUR PRESENT JOB DO YOU WORK WITH SCHMITT TRIGGER CIRCUITS		36	36	38	
R112 R2-02 DO YOU TRACE DATA FLOW THROUGH SCHMITT TRIGGER SCHEMATIC DIAGRAMS		36	36	38	SCHMITT TRIGGERS
R113 R2-03 DO YOU USE OR REFER TO SCHMITT TRIGGER LOGIC SYMBOLS		36	36	38	
R114 R3-01 IN YOUR PRESENT JOB DO YOU FABRICATE MULTICONDUCTOR CABLES		86	86	85	CABLE FABRICATION
R115 R3-02 DO YOU FABRICATE COAXIAL CABLES		86	86	85	
S1146 S1-01 IN YOUR PRESENT JOB DO YOU PERFORM ANY TASKS ON VISUAL READOUT SYSTEMS		57	57	54	
S1147 S1-02 DO YOU PERFORM ANY TASKS ON MIXIE LIGHTS OR MIXIE LIGHT DECODER SYSTEMS		7	7	8	INPUT/OUTPUT DEVICES
S1148 S1-03 DO YOU ANALYZE MIXIE LIGHT DECODER SYSTEMS USING BOOLEAN ALGEBRA		0	0	0	
S1149 S2-01 DO YOU WORK WITH PHOTO TUBES IN YOUR PRESENT JOB		0	0	0	PHOTO SENSITIVE DEVICES
S1150 S2-02 IN YOUR PRESENT JOB DO YOU WORK WITH CHOPPER CIRCUITS		29	29	31	
S1151 S3-03 DO YOU MEASURE EXCITATION FREQUENCIES		14	14	15	
S1152 S3-03 DO YOU MEASURE VOLTAGE-CURRENT PHASE RELATIONSHIPS		7	7	8	
S1153 S3-04 DO YOU USE OR REFER TO EXCITATION FREQUENCIES		14	14	15	SYNCHRONOUS VIBRATIONS (CHOPPER CIRCUITS)
S1154 S3-05 DO YOU USE OR REFER TO VOLTAGE-CURRENT PHASE RELATIONSHIPS		14	14	15	
S1155 S3-04 DO YOU USE SERVOS IN CONJUNCTION WITH CHOPPER CIRCUIT OPERATION		21	21	23	
S1156 S3-07 DO YOU USE DETECTORS IN CONJUNCTION WITH CHOPPER CIRCUIT OPERATION		21	21	23	
S1157 S3-08 DO YOU USE ERROR SIGNAL DEVICES IN CONJUNCTION WITH CHOPPER CIRCUIT OPERATION		29	29	31	
S1158 S3-09 DO YOU USE COMPARISON CIRCUITS IN CONJUNCTION WITH CHOPPER CIRCUIT OPERATION		21	21	23	
T1159 T1-01 DOES YOUR PRESENT JOB INVOLVE ANY TASKS DEALING WITH INFRARED SYSTEMS		0	0	0	
T1160 T1-02 DO YOU INSPECT INFRARED SYSTEMS		0	0	0	
T1161 T1-03 DO YOU CLEAN INFRARED SYSTEMS		0	0	0	INFRARED
T1162 T1-04 DO YOU ADJUST OR CALIBRATE INFRARED SYSTEMS		0	0	0	
T1163 T1-05 DO YOU OPERATE INFRARED SYSTEMS		0	0	0	
T1164 T1-06 DO YOU TROUBLESHOOT WIRE CONNECTIONS OF INFRARED SYSTEMS		0	0	0	
T1165 T1-07 DO YOU TROUBLESHOOT MAJOR ASSEMBLIES OF INFRARED SYSTEMS		0	0	0	
T1166 T1-08 DO YOU TROUBLESHOOT DOWN TO INFRARED SYSTEM COMPONENT PARTS		0	0	0	
T1167 T1-09 DO YOU REMOVE OR REPLACE MAJOR ASSEMBLIES OF INFRARED SYSTEMS		0	0	0	
T1168 T1-10 DO YOU REMOVE OR REPLACE INFRARED SYSTEM COMPONENT PARTS		0	0	0	

TASK GROUP SUMMARY  
PERCENT MEMBERS PERFORMING

OY-TSK

SPC SPC SPC  
151 152 154

T1169	T1-11	DO YOU USE OR REFER TO FAR REGION	0	0	0
T1170	T1-12	DO YOU USE OR REFER TO INTERMEDIATE REGION	0	0	0
T1171	T1-13	DO YOU USE OR REFER TO NEAR REGION	0	0	0
T1172	T1-14	DO YOU USE OR REFER TO MICRON	0	0	0
T1173	T1-15	DO YOU USE OR REFER TO GRAY BOULES	0	0	0
T1174	T1-16	DO YOU USE OR REFER TO BLACK BODIES	0	0	0
T1175	T1-17	DO YOU USE OR REFER TO ABSORPTION	0	0	0
T1176	T1-18	DO YOU USE OR REFER TO SCATTERING	0	0	0
T1177	T1-19	DO YOU USE OR REFER TO ABSOLUTE ZERO	0	0	0
T1178	T1-20	DO YOU PERFORM TASKS ON BLITZ	0	0	0
T1179	T1-21	DO YOU PERFORM TASKS ON TARGET BUTTONS	0	0	0
T1180	T1-22	DO YOU PERFORM TASKS ON ERECTOR LENSES	0	0	0
T1181	T1-23	DO YOU PERFORM TASKS ON OCULAR LENSES	0	0	0
T1182	T1-24	DO YOU PERFORM TASKS ON CORRECTION LENSES	0	0	0
T1183	T1-25	DO YOU PERFORM TASKS ON FILTERS	0	0	0
T1184	T1-26	DO YOU PERFORM TASKS ON SPHERICAL MIRRORS	0	0	0
T1185	T1-27	DO YOU PERFORM TASKS ON PLANE MIRRORS	0	0	0
T1186	T2-01	DOES YOUR PRESENT JOB INVOLVE ANY TASKS DEALING WITH LASERS	0	0	0
T1187	T2-02	DO YOU INSPECT LASER SYSTEMS	0	0	0
T1188	T2-03	DO YOU CLEAN LASER SYSTEMS	0	0	0
T1189	T2-04	DO YOU OPERATE LASER SYSTEMS	0	0	0
T1190	T2-05	DO YOU OPERATE LASER SYSTEMS	0	0	0
T1191	T2-06	DO YOU TROUBLESHOOT WIRE CONNECTIONS OF LASER SYSTEMS	0	0	0
T1192	T2-07	DO YOU TROUBLESHOOT MAJOR ASSEMBLIES OF LASER SYSTEMS	0	0	0
T1193	T2-08	DO YOU TROUBLESHOOT TO COMPONENT PARTS OF LASER SYSTEMS	0	0	0
T1194	T2-09	DO YOU REMOVE OR REPLACE MAJOR ASSEMBLIES OF LASER SYSTEMS	0	0	0
T1195	T2-10	DO YOU REMOVE OR REPLACE COMPONENT PARTS OF LASER SYSTEMS	0	0	0
T1196	T2-11	DO YOU USE OR REFER TO ANGSTROMS (A)	0	0	0
T1197	T2-12	DO YOU USE OR REFER TO ELECTRON ENERGY LEVELS	0	0	0
T1198	T2-13	DO YOU USE OR REFER TO GROUND STATE	0	0	0
T1199	T2-14	DO YOU USE OR REFER TO EXCITED STATE	0	0	0
T1200	T2-15	DO YOU USE OR REFER TO PACKET OF RADIATION	0	0	0
T1201	T2-16	DO YOU USE OR REFER TO PHOTONS	0	0	0
T1202	T2-17	DO YOU USE OR REFER TO SPONTANEOUS EMISSION	0	0	0
T1203	T2-18	DO YOU USE OR REFER TO STIMULATED EMISSION	0	0	0
T1204	T2-19	DO YOU USE OR REFER TO COHERENCE OR INCOHERENCE	0	0	0
T1205	T2-20	DO YOU USE OR REFER TO INVERSION LEVEL	0	0	0
T1206	T2-21	DO YOU USE OR REFER TO MONOCHROMATIC	0	0	0
T1207	T2-22	DO YOU WORK WITH ACTIVE MATERIALS	0	0	0
T1208	T2-23	DO YOU WORK WITH PUMPING SOURCES	0	0	0
T1209	T2-24	DO YOU WORK WITH FULL SILVERED (100% REFLECTIVE) MIRRORS	0	0	0

LASERS



PCT MBRS RESPONDING 'YES' BY SELECTED GRPS

TASK GROUP SUMMARY  
PERCENT MEMBERS PERFORMING

DY-TSK	TASK DESCRIPTION	SPC		SPC	
		151	152	153	154
T1210	T2-25 DO YOU WORK WITH HALF SILVERED (928 REFLECTIVE) MIRRORS	0	0	0	0
T1211	T2-26 DO YOU WORK WITH MELICAL PLASMTUBES	0	0	0	0
T1212	T2-27 DO YOU WORK WITH RUBY	0	0	0	0
T1213	T2-28 DO YOU WORK WITH HELIUM-NEON	0	0	0	0
T1214	T2-29 DO YOU WORK WITH HELIUM-XENON	0	0	0	0
T1215	T2-30 DO YOU WORK WITH XENON	0	0	0	0
T1216	T2-31 DO YOU WORK WITH CESIUM-MELIUM	0	0	0	0
T1217	T2-32 DO YOU WORK WITH ARGON	0	0	0	0
T1218	T2-33 DO YOU WORK WITH NEODYMIUM IN GLASS	0	0	0	0
T1219	T2-34 DO YOU WORK WITH GALLIUM ARSENIDE	0	0	0	0
T1220	T3-01 IN YOUR PRESENT JOB DO YOU WORK WITH DISPLAY TUBES, SUCH AS DIRECT VIEW STORAGE (DVST) OR MULTIPLE MODE STORAGE TUBES (MMST)	14	14	14	15
T1221	T3-02 DO YOU INSPECT DVST OR MMST	7	7	8	8
T1222	T3-03 DO YOU CLEAN DVST OR MMST	0	0	0	0
T1223	T3-04 DO YOU ADJUST OR CALIBRATE DVST OR MMST	7	7	8	8
T1224	T3-05 DO YOU OPERATE SYSTEMS THAT CONTAIN DVST OR MMST	7	7	8	8
T1225	T3-06 DO YOU TROUBLESHOOT DVST OR MMST	7	7	8	8
T1226	T3-07 DO YOU REMOVE OR REPLACE DVST OR MMST TUBES FROM MAJOR ASSEMBLIES OR UNITS	7	7	8	8
T1227	T3-08 DO YOU PERFORM TASKS THAT MAKE IT NECESSARY TO NAME THE VARIOUS ELEMENTS OF DVST	7	7	8	8
T1228	T3-09 DO YOU PERFORM TASKS THAT MAKE IT NECESSARY TO NAME THE VARIOUS ELEMENTS OF MMST	0	0	0	0
T1229	T3-10 DO YOU PERFORM TASKS ON FLOOD GUNS	0	0	0	0
T1230	T3-11 DO YOU PERFORM TASKS ON WRITE GUNS	0	0	0	0
T1231	T3-12 DO YOU PERFORM TASKS ON ATTACK GUNS	0	0	0	0
T1232	T3-13 DO YOU PERFORM TASKS ON ERASE GUNS	0	0	0	0
T1233	T3-14 DO YOU PERFORM TASKS ON STORAGE GRIDS	0	0	0	0
T1234	T3-15 IN YOUR PRESENT JOB, DO YOU PERFORM ANY PROGRAMMING TASKS	0	0	0	0
U1235	U1-02 DO YOU USE OR REFER TO DECIMAL SYSTEMS	0	0	0	0
U1236	U1-03 DO YOU USE OR REFER TO PROGRAMS	0	0	0	0
U1237	U1-04 DO YOU USE OR REFER TO HEXIDECIMAL SYSTEMS	0	0	0	0
U1238	U1-05 DO YOU USE OR REFER TO 8-4-2-1 SYSTEMS	0	0	0	0
U1239	U1-06 DO YOU USE OR REFER TO FOUR SYSTEMS	0	0	0	0
U1240	U1-07 DO YOU USE OR REFER TO BINARY SYSTEMS	0	0	0	0
U1241	U1-08 DO YOU USE OR REFER TO TIME-SHARING	0	0	0	0
U1242	U1-09 DO YOU USE OR REFER TO DATA WORDS	0	0	0	0
U1243	U1-10 DO YOU USE OR REFER TO ADDRESS WORDS	0	0	0	0
U1244	U1-11 DO YOU USE OR REFER TO ADDRESS/SUBADDRESS	0	0	0	0
U1245	U1-12 DO YOU USE OR REFER TO STEERING/INFORMATION	0	0	0	0
U1246	U1-13 DO YOU USE OR REFER TO INFORMATION WORDS	0	0	0	0
U1247	U1-14 DO YOU PERFORM TASKS ON SINGLE LEVEL PROGRAMMING	0	0	0	0
U1248	U1-15 DO YOU PERFORM TASKS ON MULTI-LEVEL PROGRAMMING	0	0	0	0

DISPLAY TUBES

PROGRAMMING



PCT MBMS RESPONDING 'YES' BY SELECTED GRPS

GPSUMB PAGE 99

TASK GROUP SUMMARY  
PERCENT MEMBERS PERFORMING

SPC SPC SPC  
151 152 154

DT-TSK

U1299 U1-14 DO YOU PERFORM TASKS ON INPUT DEVICES  
U1250 U1-17 DO YOU PERFORM TASKS ON STORAGE DEVICES  
U1251 U1-18 DO YOU PERFORM TASKS ON ARITHMETIC SECTIONS  
U1252 U1-19 DO YOU PERFORM TASKS ON CONTROL SECTIONS  
U1253 U1-20 DO YOU PERFORM TASKS ON OUTPUT DEVICES  
U1254 U1-21 DO YOU PERFORM TASKS ON POWER SUPPLIES  
U1255 U2-01 DO YOU USE DECIBELS TO EXPRESS AMPLIFICATION AND  
ATTENUATION  
U1256 U2-02 DO YOU USE LOGARITHMS TO COMPUTE OUTPUT POWER IN  
DECIBELS  
U1257 U2-03 DO YOU USE LOGARITHMS TO COMPUTE ATTENUATION IN  
DECIBELS  
U1258 U2-04 DUMMY TASK TO IDENTIFY INCUMBENTS WHO PERFORMED  
NO TASKS

DB AND POWER  
RATIOS

93 93 92  
29 29 31  
29 29 31  
0 0 0

AD-A044 641

AIR FORCE OCCUPATIONAL MEASUREMENT CENTER LACKLAND A--ETC F/G 5/9  
AIRBORNE EARLY WARNING RADAR SPECIALIST, AFSC 32852.(U)  
SEP 77 T J O'CONNOR, W A TAMASHUNAS

UNCLASSIFIED

NL

2 OF 2  
ADA  
044641



SUPPLEMENTARY

INFORMATION



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**SUPPLEMENTARY**

**INFORMATION**

corrected

A044 641

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17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report)														
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19. KEY WORDS (Continue on reverse side if necessary and identify by block number)  <table border="0"> <tr> <td>Electronic principles</td> <td>Electronic technicians</td> <td>Training</td> </tr> <tr> <td>Basic electronics</td> <td>Electronics</td> <td></td> </tr> <tr> <td>Avionics</td> <td>Air Force Training</td> <td></td> </tr> <tr> <td>Electronic equipment</td> <td>Teaching methods</td> <td></td> </tr> </table>			Electronic principles	Electronic technicians	Training	Basic electronics	Electronics		Avionics	Air Force Training		Electronic equipment	Teaching methods	
Electronic principles	Electronic technicians	Training												
Basic electronics	Electronics													
Avionics	Air Force Training													
Electronic equipment	Teaching methods													
20. ABSTRACT (Continue on reverse side if necessary and identify by block number) <p>This report summarizes the results of the administration of the Electronic Principles Inventory to airmen assigned as Airborne Early Warning Radar Specialist (AFSC 32852). The report gives a detailed listing of the technical tasks and knowledge needed to perform the jobs within the specialty or career ladder.</p> <p style="text-align: center;">27                      CONTINUED</p>														



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7 This specialty has the following functions:

Inspects, repairs, removes, replaces, modified, and maintains airborne warning and control radar and IFF systems and support equipment. Performs scheduled maintenance on airborne warning and control radar and IFF equipment. Performs unscheduled maintenance on airborne warning and control radar and IFF equipment. Maintains support equipment. Maintains inspection and maintenance records. Supervises airborne warning and control radar maintenance personnel.

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